THE MAGAZINE OF RECREATIONAL COMPUTING
APRIL 1984

COMPUTER FUN

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Micro Masterpieces

The Fine Art Of Graphics Software

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Your Own Data Base

Add-on Boards: Are They Worth It

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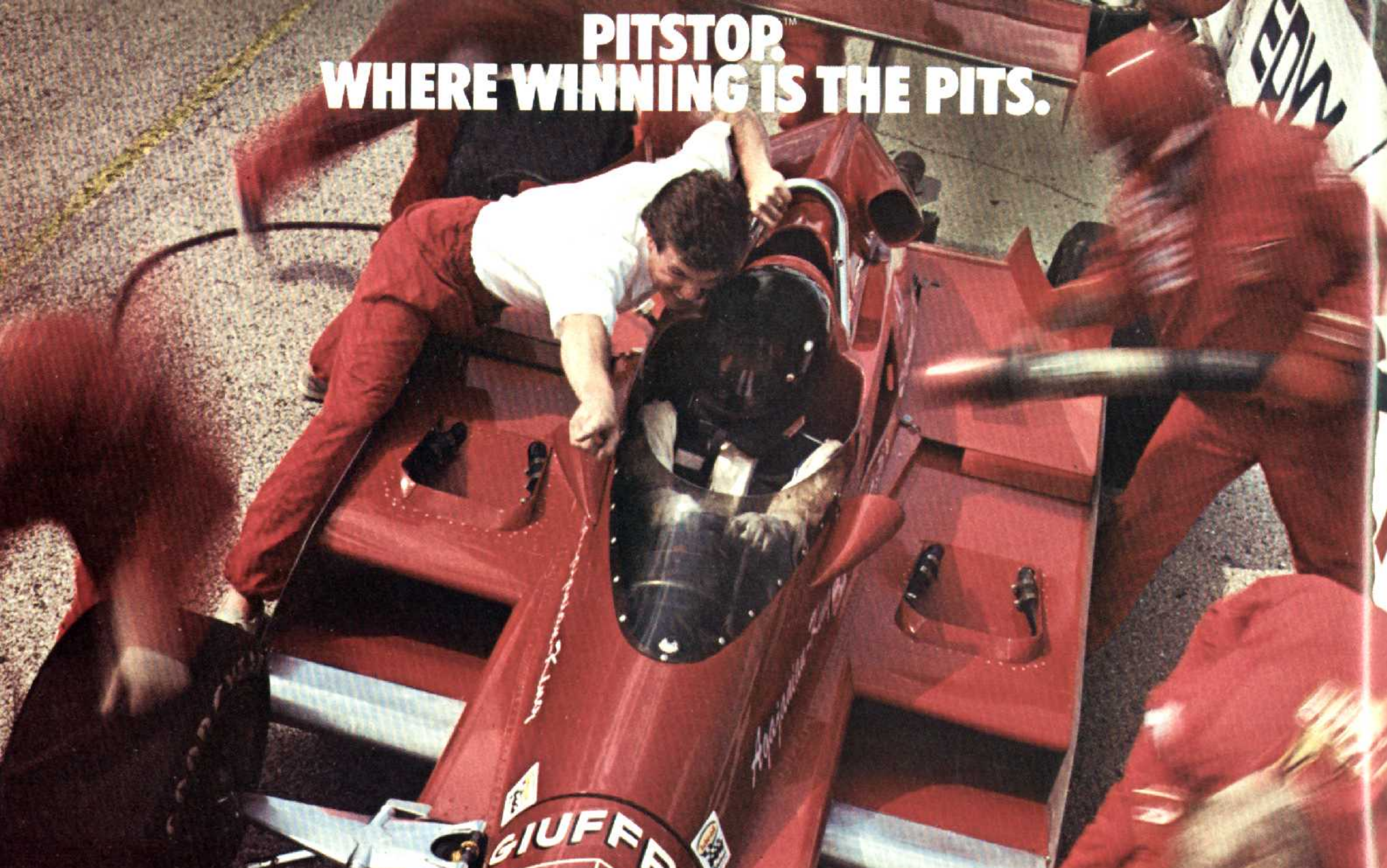
PITSTOP.™ WHERE WINNING IS THE PITS.



You'll never make Grand Prix champion just driving in circles.

You've got to stop sometime. The question is when. Right now you're in the lead. But the faster you go, the more gas you consume. And the quicker your tires wear down.

If you do pull into the pits, though, you lose precious seconds. So it's up to you to make sure the pit crew is quick with those tires. And careful with that gas. Otherwise, poof! you're out of the race.

See your retailer for available computer formats.

So what'll it be, Mario? Think your tires will hold up for another lap? Or should you play it safe and go get some new ones?

Think it over. Because Pitstop™ is the one and only road race game where winning is more than just driving. It's the pits.

Goggles not included.

One or two players; 6 racecourses, joystick control.

EPYX™ COMPUTER SOFTWARE

STRATEGY GAMES FOR THE ACTION-GAME PLAYER.

EPYX
Strategy Games for the Action-Game Player
PIT STOP

THE MAGAZINE OF RECREATIONAL COMPUTING

COMPUTERFUN

APRIL VOL. 1 NO. 1

Features

The Electronic Paintbrush/20

By George Kopp

Creating computer art was never so easy. In this step-by-step article we show you how to get the most out of graphics programs by releasing the creative spirit in you.

Have Your Machine Call My Machine/26

By Suzan Prince

Armed with just a computer and a modem you can access hundreds of data bases around the country. With a lot of dedication—and not very much money—you can start one yourself.

Gnusto Ozmoo/30

By Randi Hacker

A look at what makes Infocom's text adventures so great, complete with valuable tips on how you can become a better adventurer or sorceror or Ensign Seventh Class or archeologist or . . .

Gamemakers: You Are Now Getting Sleepy/36

Interview by George Kopp and Randi Hacker

Ihor Wolosenko, the main brain at Synapse, tells all about *Relax*, the biofeedback program for the stressful set, which also puts you on intimate terms with your computer.

Databaseline Service/40

By Ann Liguori

At the press of a few buttons on a portable computer, you can get an instant analysis of your game. Computennis is being used at many of the top pro matches such as the U.S. Open. Could it have won a title for Lendl?

Hands On: All On Boards/46

By Robert Alonso

We try out add-ons to make your Atari smarter, your Commodore loquacious and your Apple an orchestra, just to name a few.

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Cover: Steve Phillips

OIL BARONS.™
IF YOU'RE SMART, YOU'LL GET FILTHY RICH.

OIL STRIKE AT 10672 FEET

Are you a gambler, eager for new challenges… ready to pit your skill and luck against others in an attempt to corner the world oil market? If so, Oil Barons is your game.

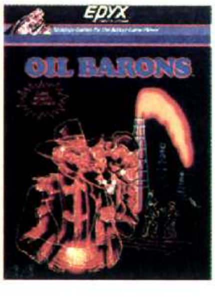
Starting with 4 parcels of land and over $1 million, you search for that ever-elusive gusher. The computer does all the work, including banking and scorekeeping, freeing you to plan your strategy and make decisions that will ultimately determine your success.

Obstacles like government regulations, well fires, and hurricanes complicate matters, but the fun of increased land holding, striking it rich, and even unloading worthless parcels on the uninitiated, more than make up for the setbacks.

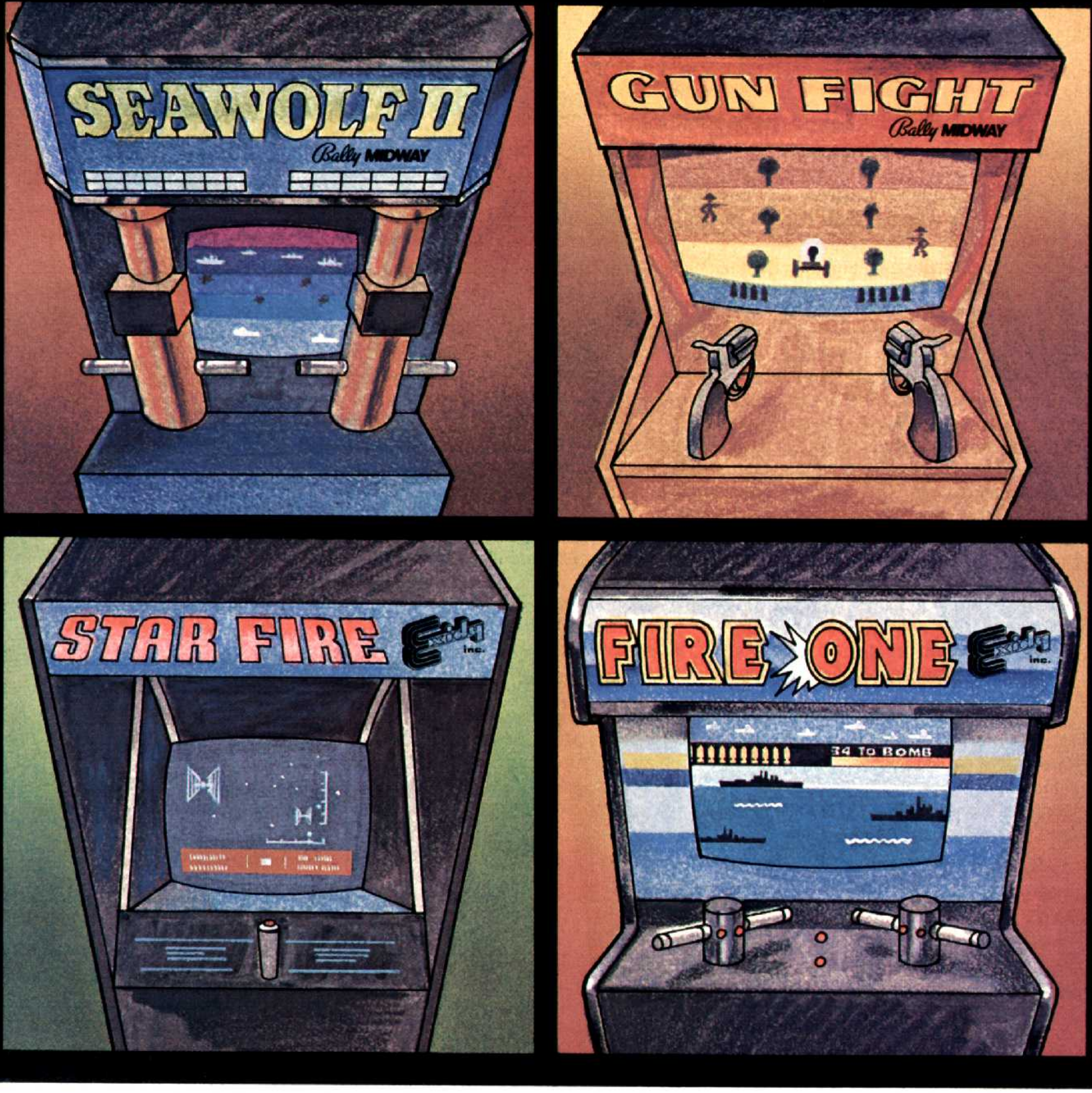
One to eight players, 4 color gameboard and playing pieces included, keyboard controlled.

EPYX™ COMPUTER SOFTWARE

Strategy Games for the Action-Game Player



ARCADE CLASSICS.
A BLAST-FROM-THE-PAST.


SEAWOLF II
Bally MIDWAY
GUN FIGHT
Bally MIDWAY
STAR FIRE
Exidy inc.
FIRE ONE
Exidy inc.
34 TO BOMB

Remember those great arcade games of the past?

Games like Bally Midway's™ Seawolf II.™ As sub commander, you torpedo enemy ships moving at different speeds. Sink as many as you can, but watch out for the mine fields.

And Bally Midway's Gun Fight.™ In the most famous shootout of all time, you'd better be a straight shooter and fast on the draw.

Exidy's™ Starfire™ gives you outerspace graphics that are out of this world. Plus a starship with laser cannons to help you rid yourself of alien forces.

And there's Exidy's Fire One!™ Hone in on the enemy with sonar. Then it's up periscope and torpedoes away.

EPYX has brought the arcade classics home—at the right price for you. We've combined the Bally Midway classics Seawolf II and Gun Fight on one disk and Exidy's classics Starfire and Fire One on another. So get the arcade classics today and have a blast-from-the-past on us.

One or two players; joystick controlled; arcade style graphics and sound.

EPYX™
COMPUTER SOFTWARE

Strategy Games for the Action-Game Player

EPYX
Arcade Classics
STARFIRE
FIRE ONE
EPYX
Arcade Classics
SEAWOLF II
GUN FIGHT

EDITORIAL

THE MAGAZINE OF RECREATIONAL COMPUTING
COMPUTERFUN

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We know you. Yes, you. You bought your home computer for all the reasons the ads told you to. You bought it so your kid wouldn't flunk out of school. You bought it so you could finish your homework in three minutes, leaving you more time to go out on dates. You bought it so you could do your taxes, file your recipes, balance your checkbook, figure out how long your unemployment insurance would last. You bought it so you could see how many seconds you could shave off Alan Alda's hooking-it-up record in time to make the Olympic team.

But mainly you bought it because you thought it might be fun. Don't shake your head. Don't say, "If I want fun I'll open a can of beer and watch 'Mr. Smith.' " Deep down you think you might possibly get some enjoyment out of your computer. *ComputerFun, The Magazine of Recreational Computing,* is written by and for people who love their computers, and we're here to tell you what you can do with your machine that you couldn't have done without it.

Things like computer art. Just try doing computer graphics without a home computer. See how far you get. Or playing computer games. Or communicating by modem with other computers. You could try hooking up a modem to your toaster, but you wouldn't be able to access so much as an English muffin. Computer programming is also pretty tough without a computer.

Every month *ComputerFun* will be chock full of articles about computing just for the fun of it. Yes, you might learn something along the way, but that's the trouble with computers. They're so interesting that you begin to enjoy yourself just discovering all the nifty things they can do. That's not our fault, though. We attach no moral value to knowing anything about computers, except among our writers, who can always be counted on for accurate information, honest opinions and clear answers to all your computer questions.

In fact, we've been experts in electronic fun since we began *Electronic Fun With Computers and Games* in November of 1982. With so many of our readers now owning computers—and so many computer owners not among our readers—we decided to refocus the magazine to provide the greatest fun for the greatest number. So welcome to *ComputerFun.* We look forward to seeing you each month, and we sincerely hope the feeling is mutual.

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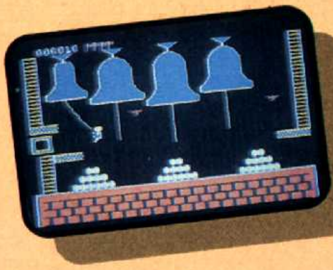
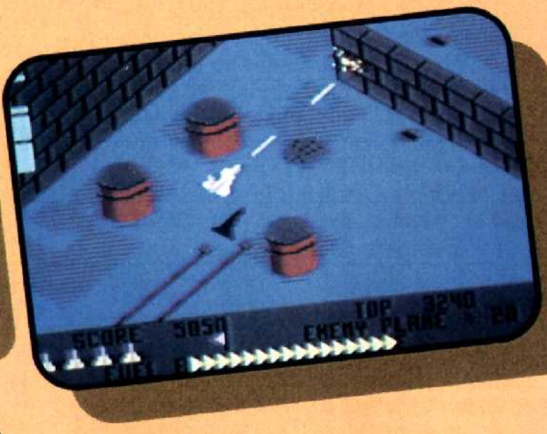
ZAXXON FOR THE C-64!

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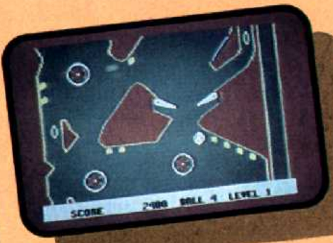
ENEMY PLANE
FUEL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Quasimodo

Quasimodo knows who stole the crown jewels. He even knows where they are, but the soldiers just won't leave him alone! This multi-screen arcade adventure is a great combination of skill and strategy.

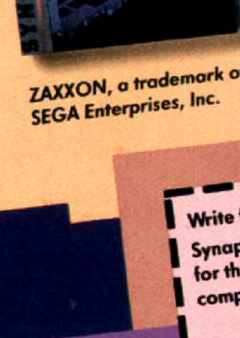
Commodore 64 disk & cassette

QUASIMODO
SYNAPSE SOFTWARE

ZAXXON

At last, your favorite arcade game comes home to the C-64! Amazing 3-D graphics, a diagonally scrolling screen and incredible sound effects guarantee hours of space excitement. And if you practice hard, you might be able to meet the deadly ZAXXON himself.

Commodore 64 disk & cassette


The Official
ZAXXON
by SEGA
SYNAPSE SOFTWARE

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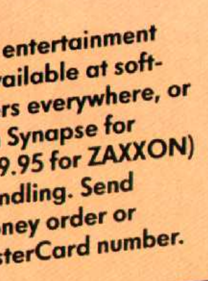
Slamball

Maybe you've played pinball before, but not like this! Up and down scrolling over 4 full screens, plus complete ball control and even a "tilt" feature in the best computer pinball game yet.

Commodore 64 disk & cassette


SLAMBALL
SYNAPSE SOFTWARE

More C-64 Titles:

Blue Max, Fort Apocalypse, Shamus and Shamus Case II, Necromancer, Pharaoh's Curse, Zeppelin, Drelbs, Sentinel.

All Synapse entertainment titles are available at software dealers everywhere, or direct from Synapse for $34.95 ($39.95 for ZAXXON) plus $2 handling. Send check, money order or VISA/MasterCard number.

Write for a FREE Synapse catalog. Synapse games are also available for the Atari, Apple and IBM computers.

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LETTERS

Intellivision Fan

Is there a chance of my getting in touch with other Intellivision fans so we could trade cartridges and exchange ideas? I would like to reach other readers who feel the same way I do about Mattel. Keep up the good work. Thank you!

Tyler Aguinaldo
Laguna Beach, CA

For those of you who would like to write to Tyler, his address is 435 El Camino del Mar, Laguna Beach, CA 92651.

Hot CoCo

I'm an avid fan of your magazine. I think the reviews are great. They've saved me a lot of money on cartridges for the 2600, but I'd also like to see some reviews of the TRS-80 CoCo and the software available for it. The review you gave it in your December 1983 issue hardly did it justice. Please give the Color Computer a chance. I'm sure there are a lot of other people that would agree.

Greg Bartels
Glen Haven, WI

Well, Greg, we're not too sure why you say Jules Gilder's review hardly did justice to the CoCo. He begins by calling it "a powerful and versatile computer." He also mentions later on that the Radio Shack catalog lists 75 programs, as well as third-party software companies and three CoCo-specific magazines. And if you check our October 1983 issue, you'll find a buyer's guide for the TRS-80, which lists many TRS-80 games.

Adam Program

Your magazine is great; I've been getting it for 6 months and am planning to extend my subscription. About the First Screening section, how about putting in some Adam games, when you get them? I know the Adam just came out, but please put one in as soon as possible.

John Blake
Baton Rouge, LA

No sooner said than done. Check the First Screening section in this issue for our first Adam program, Crayons, *by Jason Hirsch. We will continue to publish First Screenings for a variety of computers as we receive them from readers.*

SCORE
HISCORE

Forbidden Forest

Could you please tell me where I could purchase Forbidden Forest which was reviewed by Robert Alonso in your February 1984 issue?

Mrs. Philip Moore
San Antonio, TX

"Forbidden Forest" is produced by Cosmi, whose address is 7031 Crest Road, Palos Verdes, CA 90274. If you write to them, they will be able to tell you where you can buy the game.

Apple Hacker

I would like to say that your magazine is terrific. But why haven't you guys written any programs for the Apple in Hackers Helper? I mean, guess how the other people, beside me feel left out? Can you add just one page?

Allen Tadeo
San Jose, CA

Don't despair! Starting with the May issue, Hacker's Helper will include the Apple computers. Owners of other computers can rest assured that in future issues an increasing variety of computers will be covered.

Write to us! We can't promise we'll print all the letters we receive but we want to hear from you. Send your letters to: ComputerFun, 350 East 81st St., New York, New York 10028.

WIN $5,000 IN CASH

THE Champ #1 USA

Announcing The First

ELECTRONIC OLYMPIAD DECATHLON CONTEST

Sponsored by Championship Electronics

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2ND PLACE: $2,000 cash.
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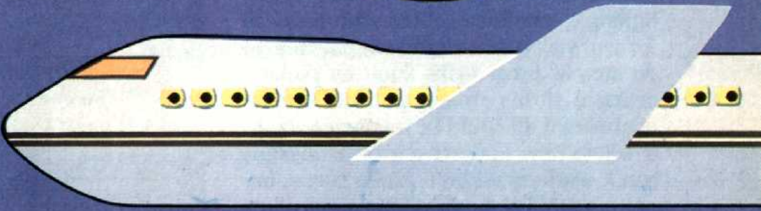

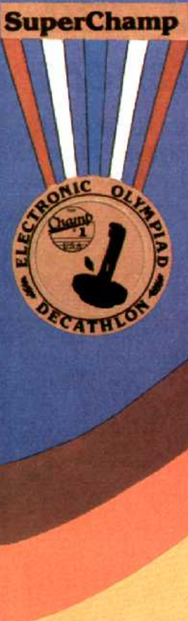

Gold Medal to #1 Champ.
Silver Medal to #2 Champ.
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FREE trip to California, 3 days and 2 nights, as a guest of Championship Electronics.

SuperChamp features: 10 ft. retractable cord, extra sensitive dual-firing buttons for right- or left-handed players, and suction cups for one-hand control.

HOW TO ENTER:

1. Buy the SuperChamp JC-250 Joystick from your local dealer.
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3. Using your SuperChamp JC-250 Joystick, record your BEST SCORE for each of the 10 events.
4. Take a picture of your final points total from the 10 events.
5. Fill out the official contest Entry Form and Score Card which is enclosed in the SuperChamp box.
6. Send both, along with photograph, proof-of-purchase seal: Model Number JC-250, and store receipt to: Championship Electronics, 711 Grandview Dr., So. San Francisco, CA 94080.
7. If you already own a SuperChamp JC-250 Joystick, send a stamped, self-addressed envelope with proof-of-purchase seal: Model Number JC-250, and store receipt to Championship Electronics. We will send you a free Entry Form and Score Card.

RULES:

1. Employees of Championship Electronics and their families are not eligible to enter.
2. Entries must be post-marked no later than June 15, 1984

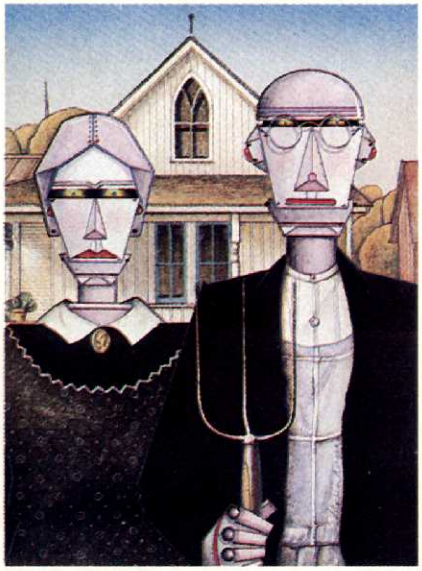
*Minors must be accompanied by one parent, expenses complements of Championship Electronics.

GLITCHES

By Randi Hacker

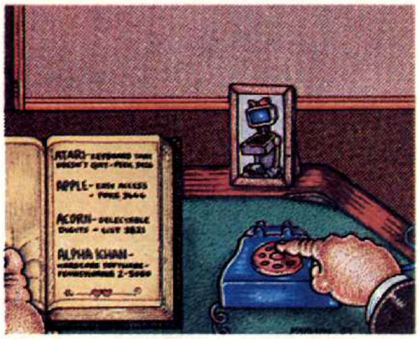
Ploughshares into robots

As we understand it, the government is currently paying farmers not to grow crops. So why they need robot laborers to work their vast acreage remains a complete mystery. Nevertheless, according to the *New York Times*, agricultural engineers in Florida are hoping to produce robots with a crude form of vision that would enable them to do simple farm tasks such as picking oranges. If this project materializes the upshot of it all could be the formation of a whole new underdog group: migrant robot workers without green cards. Imagine scores of illegal alien robots pouring across the border from Mexico and working for less than the minimum wage.



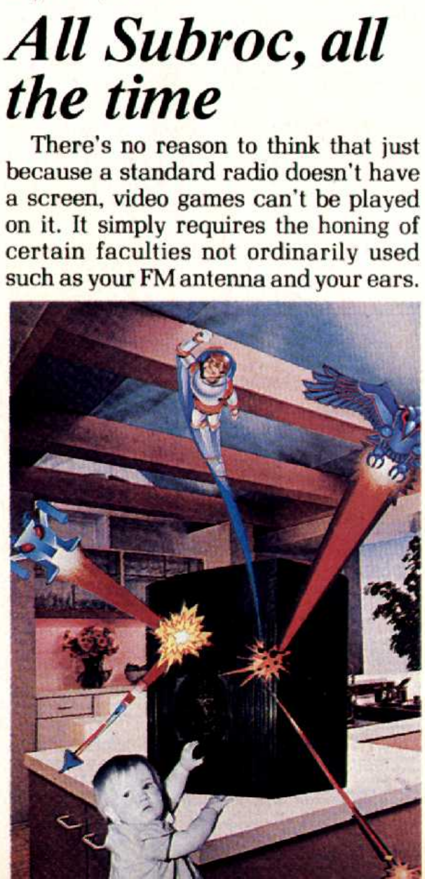
Dial M for Modem

It is high time someone addressed the issue of computers and phones. With the rise in popularity of the modem, computers are now spending more time on the phone than your average stereotypical teenager. This is annoying, particularly if you have to call home to say you're going to "work late again." But, just in case, your computer isn't making its quota of phone calls, there's the Computer Phone Book (New American Library) which is a comprehensive directory of all on-line databases that can be accessed. We fully expect that this is only the precursor to The Little Computer Black Book—a comprehensive directory to who is a good data (get it?) and who isn't.



All Subroc, all the time

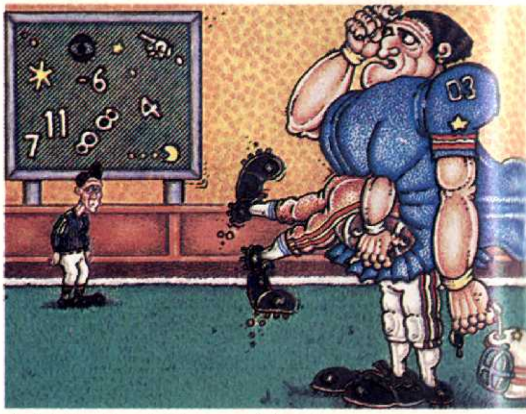
There's no reason to think that just because a standard radio doesn't have a screen, video games can't be played on it. It simply requires the honing of certain faculties not ordinarily used such as your FM antenna and your ears.



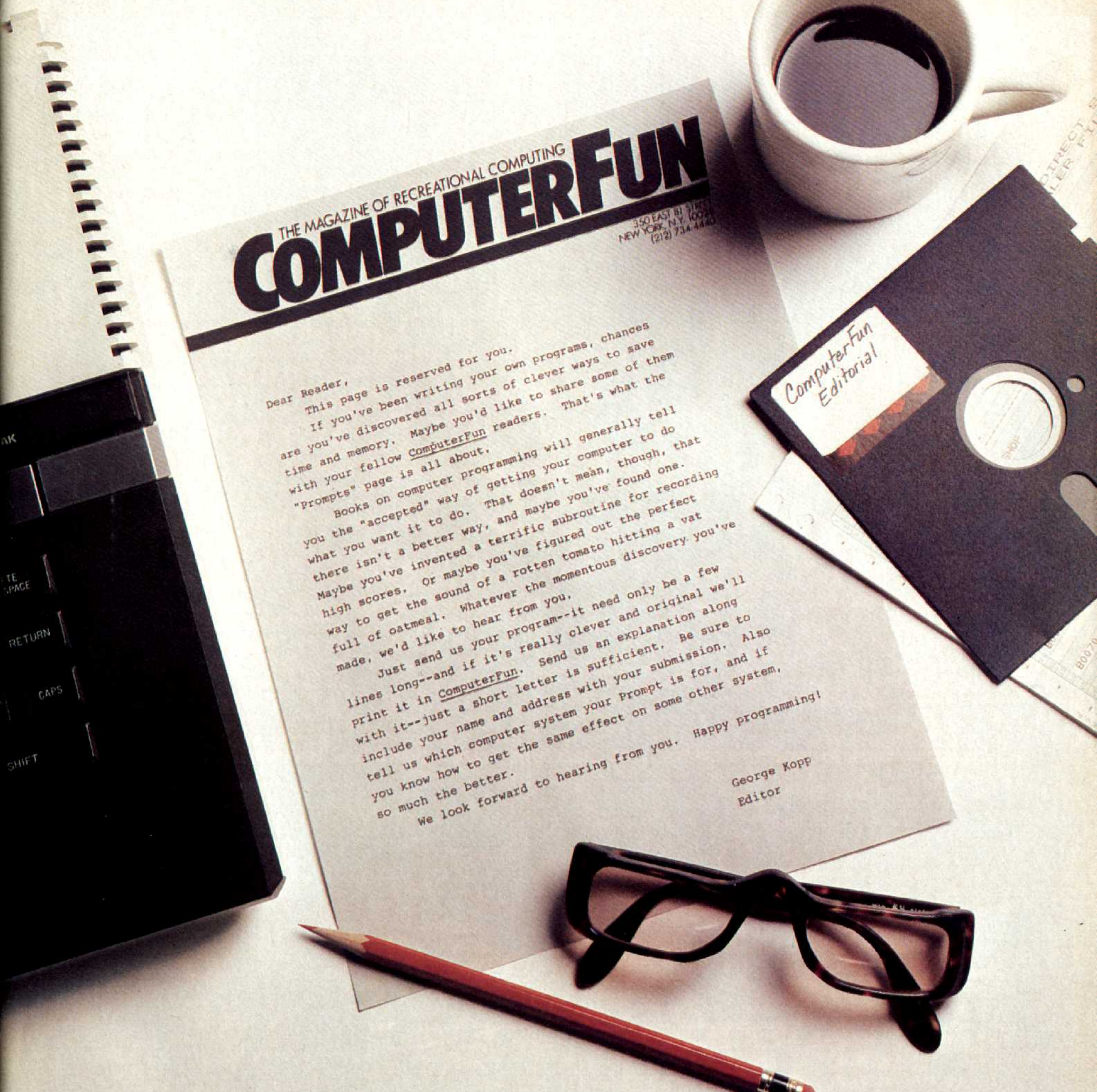
Think of yourselves as that pinball player in *Tommy* if you want but don't pooh-pooh the idea until you've tried it And try it you can if you tune into to WNIR radio in Akron, Ohio which is broadcasting Gameradio, America's Audio Arcade. Gameradio is a show which combines live interaction and participation via telephone in a series of games such as card games, fact games and games of luck. Prizes are awarded. No joystick is necessary. Now's your change to buy those earphones with the continuous action fire buttons you've been wanting.

Tight ends and on-line backers

The next time you hear someone attack the modern school system for not teaching anything useful you just come right back at them with this story: Recently, a college computer class was given an assignment. The assignment was to go out and do something creative with what they had learned in this particular class. We don't know what the rest of the class did but one team broke into the data base on which the college football scoreboard kept its information. During the course of one of the games, they changed the score and the names of the teams that were playing. You just tell those detractors that and see where it gets you.



PROMPTS


ComputerFun
Editorial
RETURN
CAPS
SHIFT

THE MAGAZINE OF RECREATIONAL COMPUTING
COMPUTERFUN
350 EAST 81 STR
NEW YORK, N.Y. 1002
(212) 734-4440

Dear Reader,

This page is reserved for you.

If you've been writing your own programs, chances are you've discovered all sorts of clever ways to save time and memory. Maybe you'd like to share some of them with your fellow ComputerFun readers. That's what the "Prompts" page is all about.

Books on computer programming will generally tell you the "accepted" way of getting your computer to do what you want it to do. That doesn't mean, though, that there isn't a better way, and maybe you've found one. Maybe you've invented a terrific subroutine for recording high scores. Or maybe you've figured out the perfect way to get the sound of a rotten tomato hitting a vat full of oatmeal. Whatever the momentous discovery you've made, we'd like to hear from you.

Just send us your program--it need only be a few lines long--and if it's really clever and original we'll print it in ComputerFun. Send us an explanation along with it--just a short letter is sufficient. Be sure to include your name and address with your submission. Also tell us which computer system your Prompt is for, and if you know how to get the same effect on some other system, so much the better.

We look forward to hearing from you. Happy programming!

George Kopp
Editor

SLIPPED DISKS

By Marc Berman

Heads, I Ching Tails, You Lose

The ancients believed that seemingly random events were all part of some grand scheme. The truly wise among them were then able to tell you that if you were born at 4:17 p.m. on January 22, 573 B.C., next Thursday would be a good day to buy Coleco stock. A lot of people still think this method makes as much sense as generating a bunch of economic indicators out of a computer as a way of determining when to buy Coleco stock, and they may be right. In fact, the next time you visit your broker you might want to check whether his desktop terminal is hooked into the Big Board or is booted up to *Soothsayer*, the *I Ching* program from Warlock Software.

Soothsayer
THE ELECTRONIC I CHING

Yarrow Escape

The *I Ching* is a storehouse of thousands of years of Oriental wisdom which predates written history, not to mention fortune cookies. It's essentially a collection of inscrutable statements, of which only a small few are relevant at any particular time. To determine which ones are relevant to you at any given nanosecond of your measly existence you generate a few convenient random events. The ancients did this by throwing yarrow sticks, which we've found hard to come by (mainly because we don't know what they are). The moderns throw three coins. (Note: Do not throw them into a fountain until *after* consulting the *I Ching*.)

The toss of the coins or sticks determines how you draw your hexagram—a pictogram constructed of six broken and unbroken lines. There is only a (very large) finite number of hexagrams that can be generated by tossing three coins, but every possible configuration of broken and unbroken lines is given a meaning in the *Book of Changes*, or *I Ching*. These hexagrams tell the future or simply answer a question or recommend to you a course of action.

The answers are written in flowery Confucian prose. Sometimes the meaning will be readily apparent and pertinent in a spooky and uncanny way. Other times wading through references to "white foxes" and "ice covered rivers," "princes" and "great men" can really test your faith in the accuracy and authenticity of this form of prediction. But never mind—either way, it's fun.

Once you've decided on the method of divination, you think a question at the computer. You never actually type it in. Brain waves are what matter here. As you're thinking you're either tossing coins or punching keys on the computer or both. After the routine is finished, you sit back and read.

I've been intrigued by Chinese wisdom ever since I got a fortune cookie saying, "You will guest host *The Tonight Show*." Naturally, I had high hopes for *Soothsayer* and decided to put it to the test by asking it a question of the utmost importance, namely, "Should I take the job I've been offered in California?" I decided first to try the computer-generated yarrow stalk method. I concentrated until my thigh cramped and when I pressed the space bar, this is what *Soothsayer* said:

"Kien: The symbol of difficulty. In the state indicated by Kien advantage will be found in the Southwest and the contrary in the Northeast. It will be advantageous also to meet with the great man. In these circumstances, with firmness and correctness there will be great fortune."

So Hsu Me

It was clear that the *I Ching* wanted me to move to California. But who is the great man, I wondered. My new boss? The Apple repairman? Kareem Abdul Jabar? I pressed the space bar to find out what the broken lines in my hexagram meant.

"Moving Hsu (not to be confused with Runaround Hsue or The Bronx Hzoo), the symbol of waiting. Hsu indicates that with the sincerity which is declared in it, there will be brilliant success. With

Continued on page 75

WE TRUST
1983
OD WE TR

Illustration: Pat Kinsley

Commodore Software– The Best Adventure In Town

ZORK I
ZORK II
ZORK III
DEADLINE
commodore

...Stretch your mind and imagination and risk all... in the comfort of your living room.

Commodore has been the best game in town in computers for awhile... at home, at school and work... with our exciting, easy to use, inexpensive VIC 20 and C64 computers.

We're fast becoming the best game in town when it comes to entertainment for the whole family... and at affordable prices.

The best adventures in town are yours with the INFOCOM ADVENTURE SERIES. Our **Zork Series** takes you through the magic dungeons to find the Dungeon Makers secrets... you'll struggle long and hard before you make it... If you make it!

Starcross lets you travel through an alien ship as it wanders thru the galaxy. Your strategic decisions mean life or death to you.

Deadline pits your wits against a deadly murderer with time running out. Stretch your reasoning to the limit.

Suspended brings you to life 500 years into the future as the possible savior of your planet. Solve the riddles and you'll be a winner and a hero!

commodore
COMPUTERS

First In Quality Software

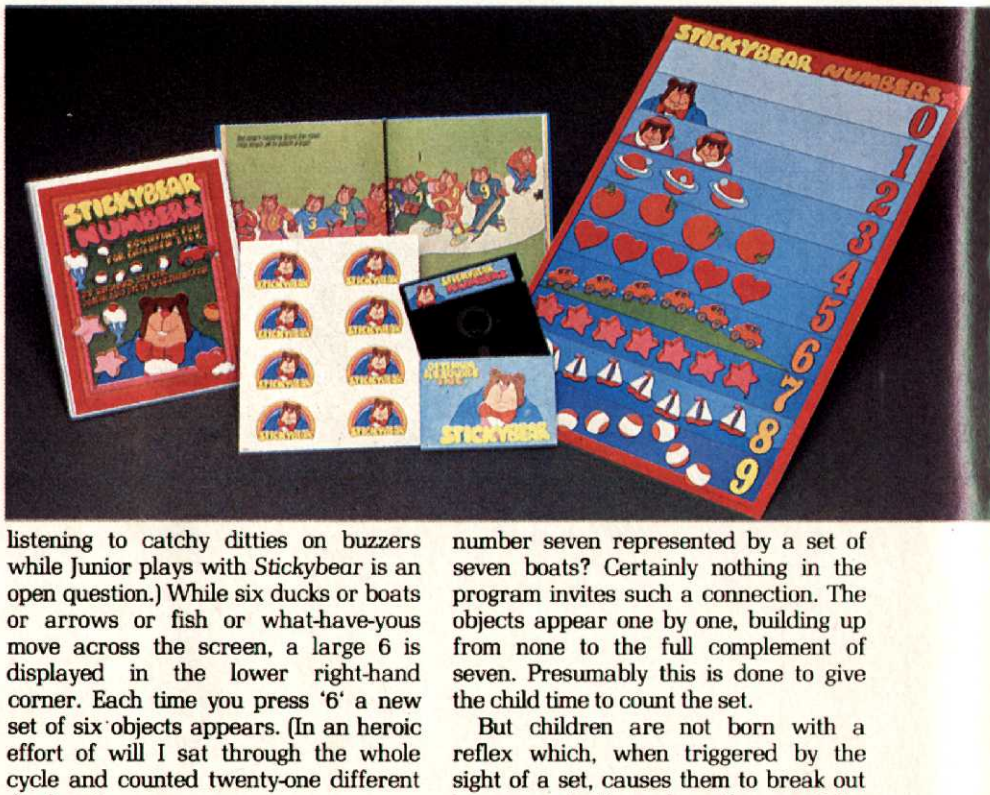
See your local dealer now... He's got the best game in town... just for you.

PASS/FAIL

By Dr. Jack Goldberg

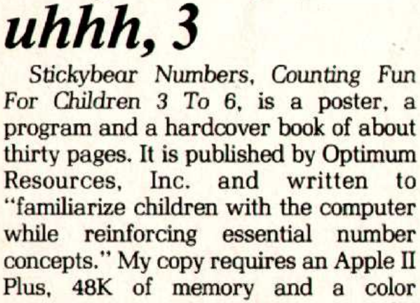
Easy As 1,2, uhhh, 3

Stickybear Numbers, Counting Fun For Children 3 To 6, is a poster, a program and a hardcover book of about thirty pages. It is published by Optimum Resources, Inc. and written to "familiarize children with the computer while reinforcing essential number concepts." My copy requires an Apple II Plus, 48K of memory and a color monitor—on a monotone screen the graphics lose effectiveness.



Think and Do

The buyer of educational software should have two concerns. Are the mechanics of the program sound and does the program achieve its educational aims? In regard to program operation, *Stickybear* is faultless. The program is well-designed for its audience and performs exactly as advertised. The graphics are superb. You can't make *Stickybear* do anything he shouldn't. *Stickybear* becomes unglued, however, when we consider its educational value.



The operating instructions for the program are simple and direct. After you load the program, press any key and you are greeted with an impressive "graphics show." For example, pressing "6" results in a display of six objects accompanied by a catchy ditty. The catchy ditty is played on the Apple's buzzer. (How long an adult can stand listening to catchy ditties on buzzers while Junior plays with *Stickybear* is an open question.) While six ducks or boats or arrows or fish or what-have-yous move across the screen, a large 6 is displayed in the lower right-hand corner. Each time you press '6' a new set of six objects appears. (In an heroic effort of will I sat through the whole cycle and counted twenty-one different displays.)

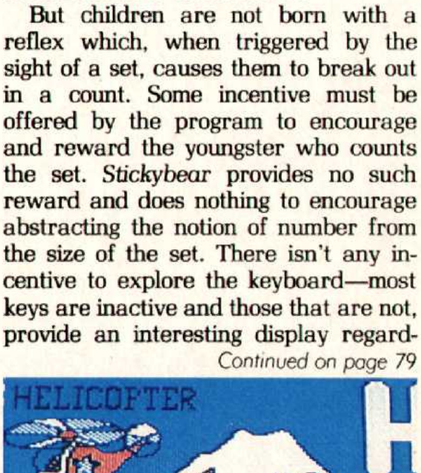
Bar To None

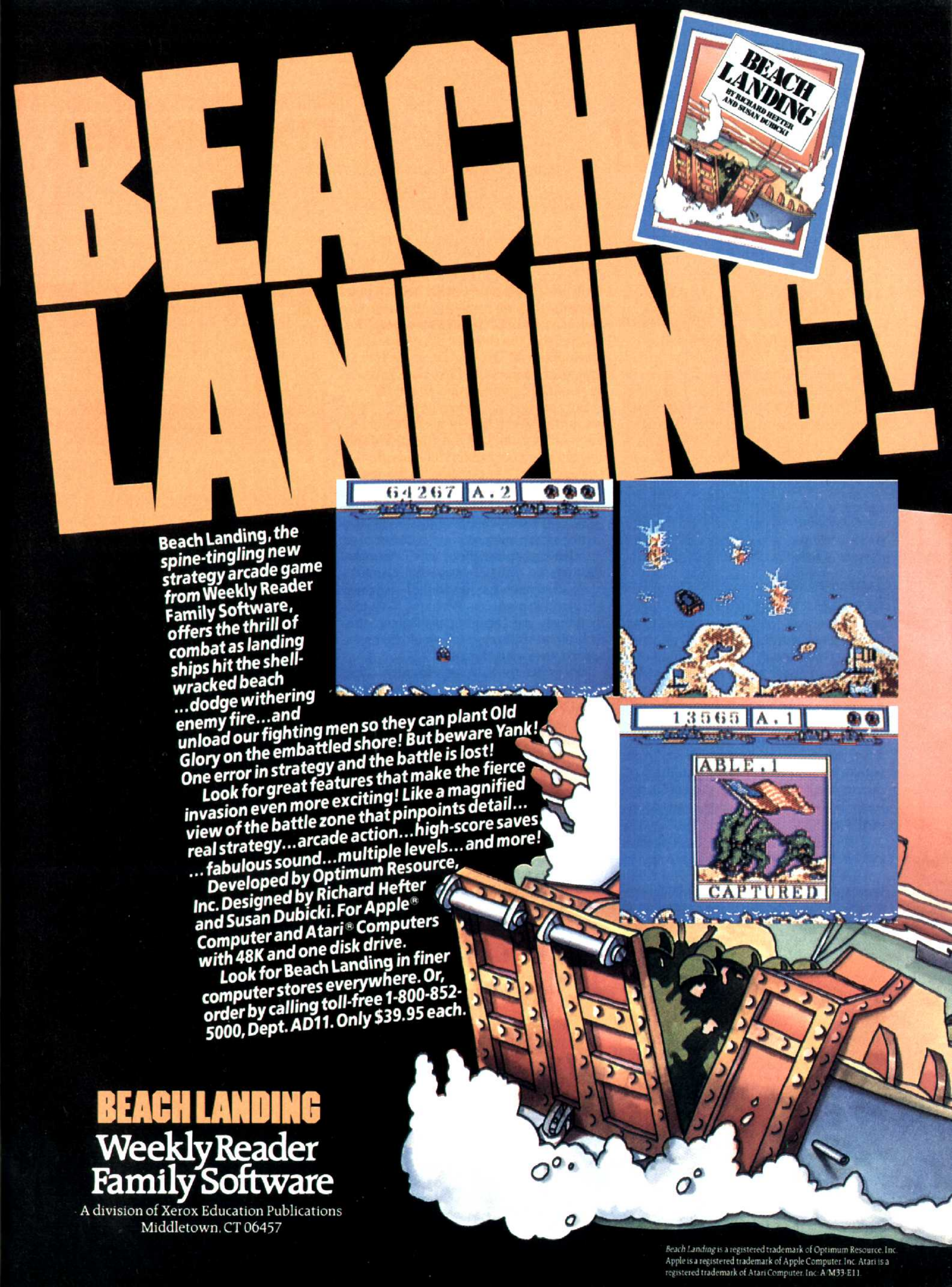
Pressing the space bar zaps one of the six objects and the six is replaced by 5. You can use the space bar to count down to zero; each press reduces the number of objects by one and correctly resets the displayed numeral. When all are gone, the screen is blank except for the large 0 in the corner. Short of chewing through the power cord or turning the Apple off, there's no way to destroy *Stickybear*. Only the numeric keys and the space bar have any effect on the program.

To a young child, seeing the numeral 7 and watching seven sailboats sailing across the screen are unrelated events. Indeed, most events in the lives of the young seem magical, capricious and unrelated. Why should the connection be made between the sign '7' and the number seven represented by a set of seven boats? Certainly nothing in the program invites such a connection. The objects appear one by one, building up from none to the full complement of seven. Presumably this is done to give the child time to count the set.

But children are not born with a reflex which, when triggered by the sight of a set, causes them to break out in a count. Some incentive must be offered by the program to encourage and reward the youngster who counts the set. *Stickybear* provides no such reward and does nothing to encourage abstracting the notion of number from the size of the set. There isn't any incentive to explore the keyboard—most keys are inactive and those that are not, provide an interesting display regard-

Continued on page 79





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Beach Landing, the spine-tingling new strategy arcade game from Weekly Reader Family Software, offers the thrill of combat as landing ships hit the shell-wracked beach ...dodge withering enemy fire...and unload our fighting men so they can plant Old Glory on the embattled shore! But beware Yank! One error in strategy and the battle is lost!

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Developed by Optimum Resource, Inc. Designed by Richard Hefter and Susan Dubicki. For Apple® Computer and Atari® Computers with 48K and one disk drive.

Look for Beach Landing in finer computer stores everywhere. Or, order by calling toll-free 1-800-852-5000, Dept. AD11. Only $39.95 each.

BEACH LANDING

Weekly Reader
Family Software
A division of Xerox Education Publications
Middletown, CT 06457

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CARTRIDGE SLOT

By Michael Blanchet

"Plays just like the arcade!"

All right, video gamers, it's time to play "What's Wrong With This Sentence," and I expect all of you to score one hundred percent. Here's the sentence: "This game features high resolution graphics, has all the thrill and gameplay of the arcade, and comes complete with two overlays and an instruction booklet." Okay, time's up! Put down your pencils and don't turn the page until you are told to do so. The correct answer is... "Everything."

Switched off

Granted it's hard to describe a video game. A lot of people resort to meaningless words, like "neat" or, even worse, "awesome." But even that's better than the kind of nonsense video game companies and salespeople throw at you when you want to know why you should spend thirty bucks for a cartridge. I'm not proselytizing for truth in advertising, but every time I hear "high resolution graphics" or "all the thrill of the arcade" a little switch goes off in my head. If this keeps up it may never come back on again.

Now that you've had your quiz, let's go over the test papers:

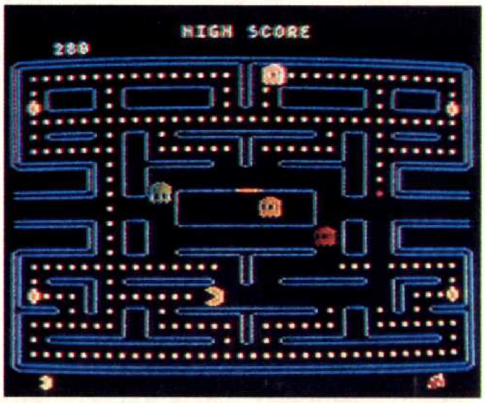
"High Resolution"—Resolution refers to graphic quality, which is determined by a count of pixels—the rectangular element that is used in various combinations to form on-screen images. The more pixels, the sharper the image. High resolution, or hi-res, is a technical computer term describing the graphics or graphics capability of a machine.

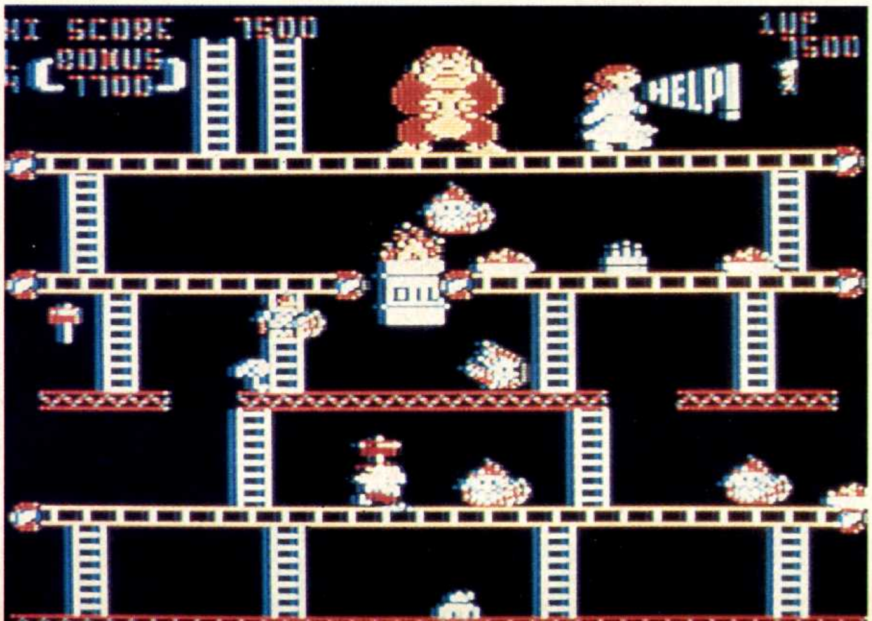
But applied to video games, "high resolution" gives little or no indication of the relative quality of the graphics. High resolution compared to what? A polished VCS design, such as *Keystone Kapers*, pales next to most Intellivision software, while a top-notch Intellivision game can barely compare to an average ColecoVision-compatible cartridge.

I don't propose that "low" be substituted for "high," even though most carts designed for dedicated systems are graphic eyesores. Perhaps, "We did the best we could considering the limitations of the system" would be more appropriate—and honest.

"Plays like the real arcade game—the key word here is "plays." In the demo mode, Atari's 5200 version of *Centipede* plays itself—that is, *it* plays just like the real arcade game. But when you hit the reset switch and take control, the game's shortcomings quickly become apparent. After a dozen successive trouncings at the hands of a game that you had no trouble whopping in a gameroom, you pinpoint the problem—you need a trak-ball, not a joystick.

Just as a coin-op translation is only as good as the system it is translated for, you are only as good as the controller you're using. Playing *Centipede* with a joystick is like cleaning your teeth with a chainsaw; the tool is not suited to the job. Therefore, I move that "plays like the real arcade game, depending, of course, on the type of controller used."





No-Thrills Products

Now, how about "the thrill of the arcade game." I've played in arcades from sea to shining sea, on fruited plains and purple mountains' majesty. I've played arcade games in bars, lobbies, candy stores, pizza parlors and gas stations. Never, *never* have I been thrilled by an arcade game. I can tell you about a roller coaster in New Jersey that's guaranteed to give you a thrill ever time, but *Donkey Kong*? Forget it. So let's rewrite the "thrill" part to read, "This game gives you the same feeling you get (whatever that is) when you play the arcade version, but not as much."

"This game comes complete with..." Game cartridges are expensive and you have every right to expect something more than just a black plastic box for your thirty or forty dollars—things like instructions and overlays. Yet many manufacturers tout these essentials as options, as if they're doing us a big favor. Hey, we're the ones keeping you guys in business!

Of course, you can always turn to the salesperson for help. But remember this—the most important sale for any

Continued on page 79

NEW PRODUCTS

Comrex International
Diskettes

You can never really have too many blank disks around, what with saving your original programs, data files and adventure games at critical points. Comrex International knows this and so has recently expanded its line of accessories for home computers and word processors with the introduction of an entire family of 5¼'' diskettes which ought to cover all your needs. There are four new diskettes: the Model CR-10005, with single disk surface and single density; CR-10010, single-sided and double density; CR-10015, double-sided, double density and their premium diskette, CR-10020. The CR-10020 is premium not only because it has a higher number, it also features double-side, double-density and comes with a lifetime guarantee. Standard diskettes are guaranteed for five years. Ten-pack prices for all these diskettes run from \$29.95 for the standard diskette to \$49.95 for the top of the line, including a plastic storage box. The storage box is also available separately for a mere \$7.50. And if you're worried about dust and pollution, each Comrex disk jacket has a special liner which cleans the disk as it turns. Comrex also produces a dual floppy disk drive which is Apple-compatible.

3701 Skypark Drive
Torrange, CA 90505

Mosaic Electronics
Rammaster 32

If you are a VIC-20 owner and have reached the point where 5K of memory just isn't enough for all you want to do with your computer, there's something you can do about that besides throwing your hands up in frustration. The Rammaster 32 lets you exploit the full potential of your VIC by increasing the memory by 32K. This gives you a grand total of 37K, 32K of which is usable for BASIC programming. The other 5K can be used for machine language and for data storage. The only way you'll be able to access it, though, will be through POKEs and PEEKs. It features a built-in expansion port. And it gives you pause and write protect switches as well as a disabler switch which allows you to remove a cartridge without having to turn off the computer. The expansion port eliminates the need for a mother board in using program cartridges. Included on the side of the Rammaster is a set of control switches that lets you configure the memory map to meet your needs. One other trick that these switches will allow you to do is make back-up program cartridges for archival purposes.

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MOSAIC
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PERFORMANCE BOOSTED RAM MEMORY
FOR VIC-20 OWNERS

VSS
Reads 2600

Despite the fact that, to hear the industry tell it, the loudest outcry is for computer games, there are still an awful lot of 2600 owners out there who would be happy not to be forgotten. But designing games on a VCS can be difficult, if not impossible. Unless, of course, you happen to own the Reads 2600. With that package, an Atari 800-compatible 6502 assembler and some imagination, you can design the VCS games of your dreams. The Reads 2600 comes with connector cables, a VCS cartridge adaptor and software that allows you to transfer your machine language program from the joystick port of an Atari 800 to your VCS. You can develop your games in the industry standard 4Kbytes or 8Kbytes. You can store the program at any stage of development on disk or cassette. This gives you ample opportunity to polish it to perfection. After assembly, simply download your program to the Reads 2600 and test it on your VCS. The package also includes software that lets you exploit the VCS sound and graphic capacity. The company has EPROMs available for you to program your software onto. There's also a Reads 2600 cartridge adaptor for VIC-20 owners.

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Total Label 2.6			
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(See 100 coupon items in our catalog!)

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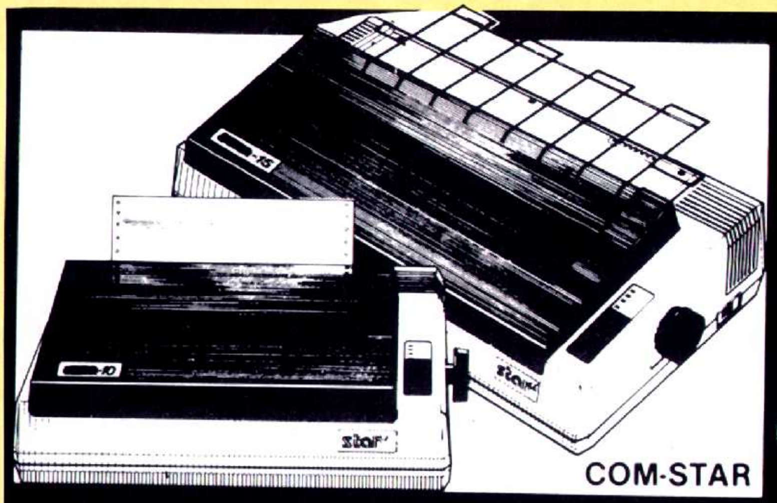

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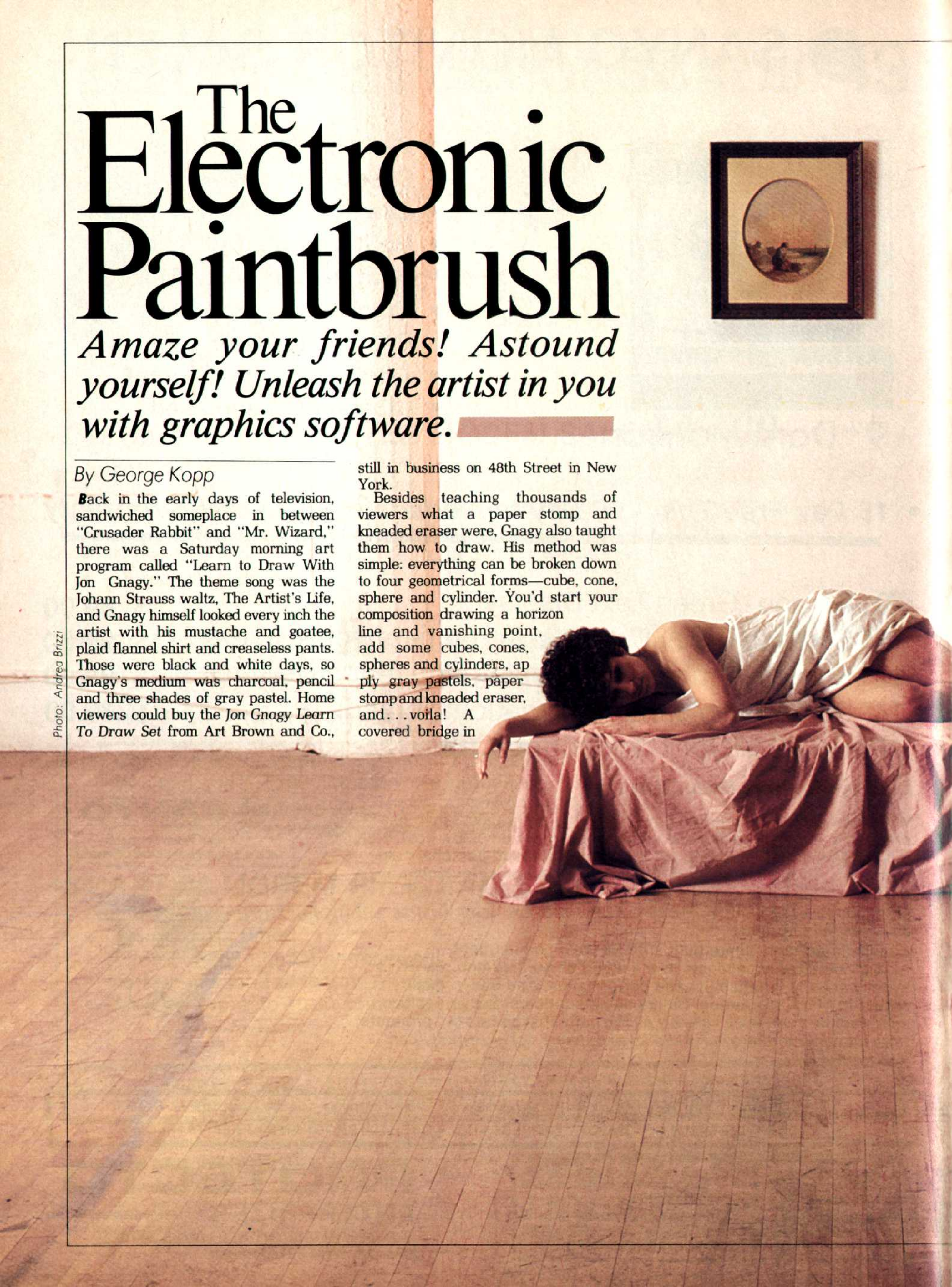


Photo: Andrea Brizzi

The Electronic Paintbrush

Amaze your friends! Astound yourself! Unleash the artist in you with graphics software.

By George Kopp

Back in the early days of television, sandwiched someplace in between "Crusader Rabbit" and "Mr. Wizard," there was a Saturday morning art program called "Learn to Draw With Jon Gnagy." The theme song was the Johann Strauss waltz, The Artist's Life, and Gnagy himself looked every inch the artist with his mustache and goatee, plaid flannel shirt and creaseless pants. Those were black and white days, so Gnagy's medium was charcoal, pencil and three shades of gray pastel. Home viewers could buy the *Jon Gnagy Learn To Draw Set* from Art Brown and Co., still in business on 48th Street in New York.

Besides teaching thousands of viewers what a paper stomp and kneaded eraser were, Gnagy also taught them how to draw. His method was simple: everything can be broken down to four geometrical forms—cube, cone, sphere and cylinder. You'd start your composition drawing a horizon line and vanishing point, add some cubes, cones, spheres and cylinders, apply gray pastels, paper stomp and kneaded eraser, and. . .voila! A covered bridge in

You can create fabulous art on your computer monitor even if you can't write a straight line of programming.

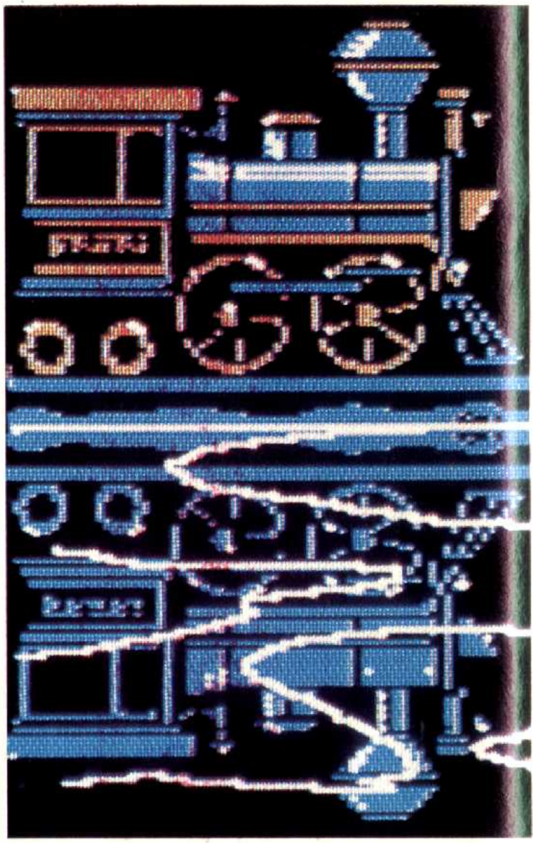
Vermont! Of course, Gnagy's covered bridge always looked like a Currier and Ives print while yours always looked like an abandoned refrigerator, but he probably had a better kneaded eraser.

Anyway, "Learn To Draw With Jon Gnagy" amounted to the sum total of my artistic education, whcih is one reason why I'm an editor. But the soul of a child of the Golden Age of Television cannot be stifled. Thanks to the miracle of computer technology I am here to tell you that, yes! You too can create fabulous art on your computer monitor even if you can't draw a straight line, not to mention write a straight line of programming. All this with no muss, no fuss, no linseed oil and no paper stomp.

There are graphics programs available for virtually every home computer system, and there are many more on the way. As with video games, the designers of graphics software have gotten cleverer and cleverer, squeezing more options and features into the newer software. Some of the software, though designed for professionals, is so easy to use that even the average Jon Gnagy dropout can master it in a short time.

How Touching

The Koalapad (below) can be operated with only a finger, although a stylus is provided. Right, some of the computer artistry of Datamost's art director, Art Huff.



Whatever the program most graphics software works along pretty much the same principles. You can either choose to draw freehand or use the library of shapes supplied in the program to create your pictures. All graphics programs let you draw lines simple by plotting two end points, and all give you a choice of "brushes" and colors to use. Some offer very useful features which allow you to create mirror images of what you've just done, repeat images of what you've just done or change all areas of one color to another color.

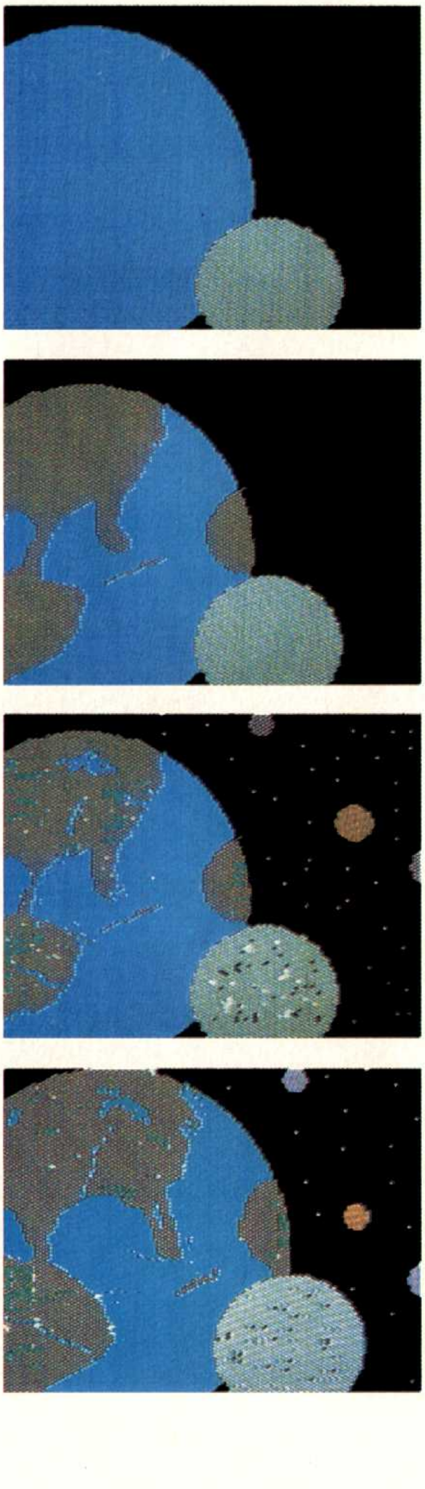
One of the biggest boons to aspiring computer artists is the gaphics tablet, long a staple of the professional and now widely available to the home user. The product that has probably had the most impact on graphics software is the Koalapad, with versions available for the Apple, Commodore and IBM computers. (Atari makes its own graphics tablet and software for its computers.) The graphics tablet is a pressure-sensitive device which controls the movement of the cursor just like a joystick or mouse. Because it's shaped like a blank slate, though, it gives a much more natural "drawing" feel when you use it. Simply touching the tablet moves the cursor. You can use your finger or a stylus, but the stylus is far more natural.

Koala markets its Koalapad with the MicroIllustrator software, developed by Island Graphics. (Chalk Board, another graphics tablet designed primarily for education, uses the same software in its graphics program.) Other software, such as *Paint Magic* from Datamost and *Fun With Art* from Epyx, can also be used with the Koalapad rather than a joystick. MicroIllustrator, though it doesn't offer all the options available on other programs, has set a standard for speed and simplicity which other software developers have set out to emulate, and by the end of the year it will probably look primitive.

Soon, animation may be a standard feature of all home graphics programs. Maybe you've seen *Movie Maker* for the Atari computers, marketed by Reston

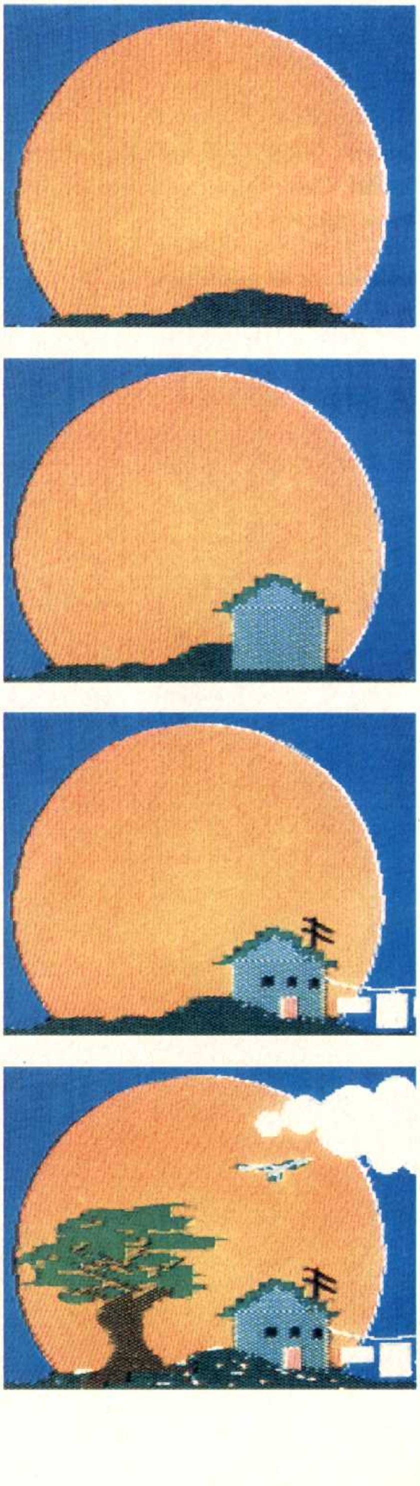
Make Mine Moon

On the first day (he used his Koalapad) the author created the heavens and earth, divided the sea and dry land, and saw that it was pretty good if he did say so himself. The step-by-step method is the best way to successful Koala-ing.



Sunrise? Sunset?

Starting with a few simple elements you can go on until you run out of ideas or out of room. By using the shape library you can often achieve better results than by simply drawing freehand. If you do draw, though, it's a good idea to use a wide brush.



Top Drawers

Here is a partial list of graphics programs available for home computer systems. Not all are available right now, but the ones not out yet should be shipping within a few weeks.

Animation Station (Ad, Ap, At, C64, IBM)—Suncom, 650 Anthony Trail, Suite E, Northbrook, IL 60062.

Chalk Board (Ap, At, C64, IBM)—Chalk Board, 3772 Pleasantdale Rd., Suite 140, Atlanta, GA.

Complete Graphics System II (Ap)—Penguin Software, 830 4th Ave., Geneva, IL 60134.

Doodle! (C64)—City Software, 735 W. Wisconsin Ave., Milwaukee, WI 53233.

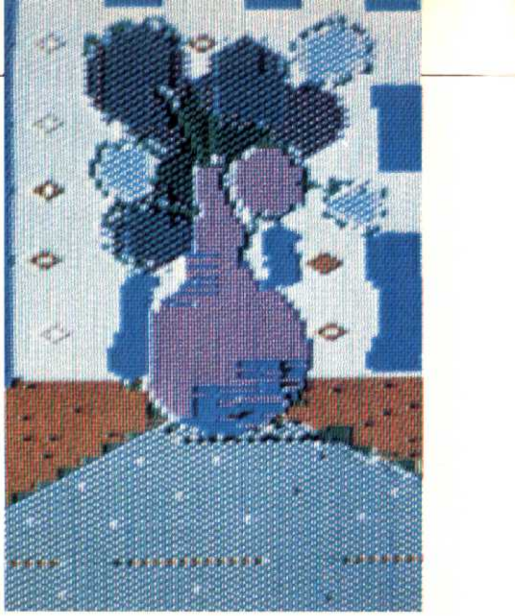
Gibson Light Pen (Ap, C64, IBM)—Koala Technologies, 3100 Patrick Henry Dr., Santa Clara, CA 95050. (Atari version)—Atari, 1265 Borregas Ave., Sunnyvale, CA 94086.

Koalapad and Microillustrator (Ap, At, C64, IBM)—Koala Technologies, 3100 Patrick Henry Dr., Santa Clara, CA 95050.

Paint Magic (At, C64)—Datamost, 8943 Fullbright Ave., Chatsworth, CA 91311.

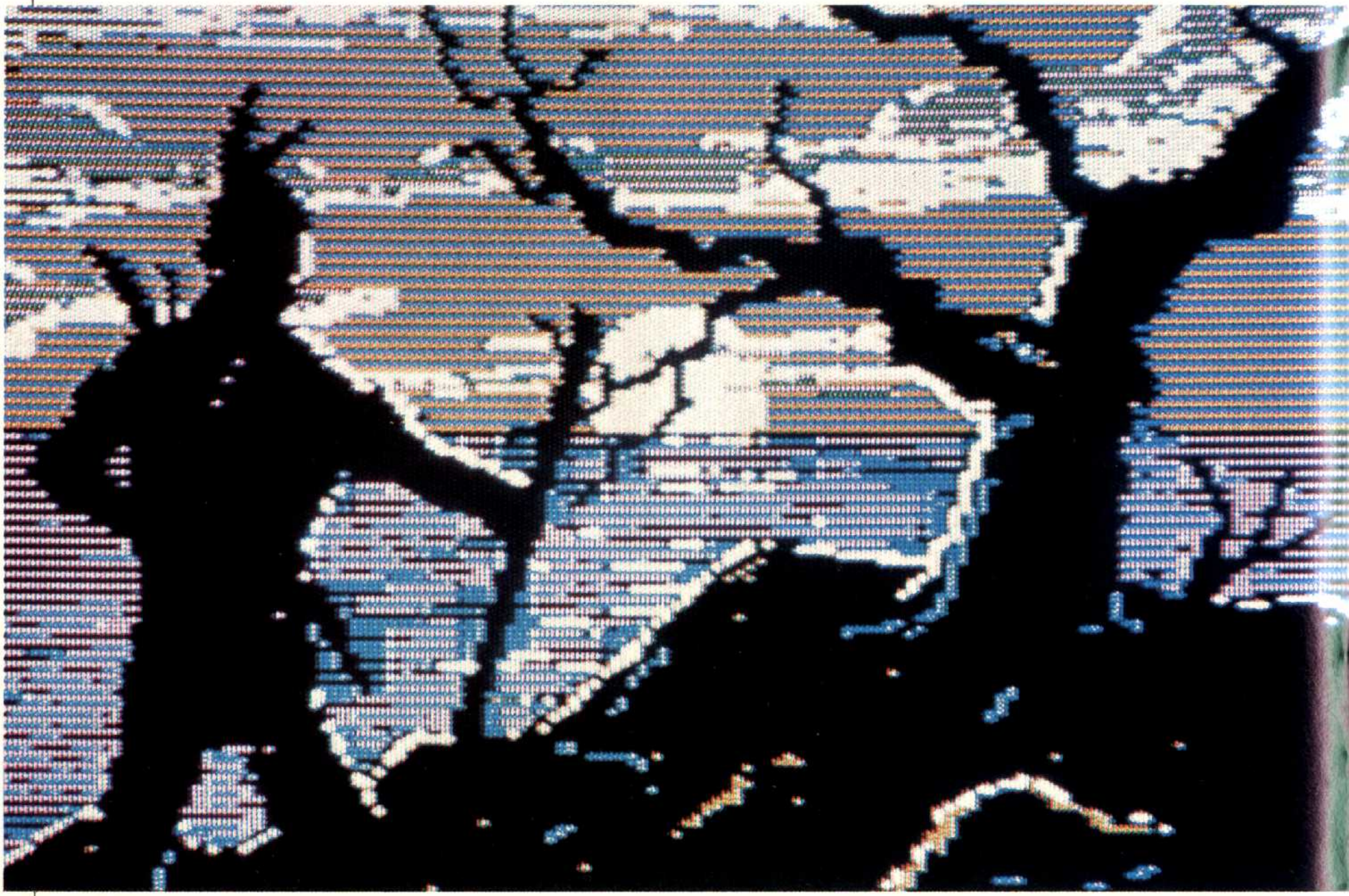
64 Panorama (C64)—Midwest Micro , 311 West 72nd St., Kansas City, MO 64114.

VIC Pics (VIC-20)—Midwest Micro, 311 West 72nd St., Kansas City, MO 64114.



Still Life (After All These Years)

The author's Cezanne period (above) shows he has a long way to go to catch up with Datamost's Art Huff, two of whose computer art compositions are shown on these pages. Huff does not use a Koalapad, though. Professional graphics tablets work along the same lines but provide a much more accurate end result for the artist.



Try to use a good, thick brush. Be bold! An inhibited artist is doomed to a life of unremitting chartered accountancy.

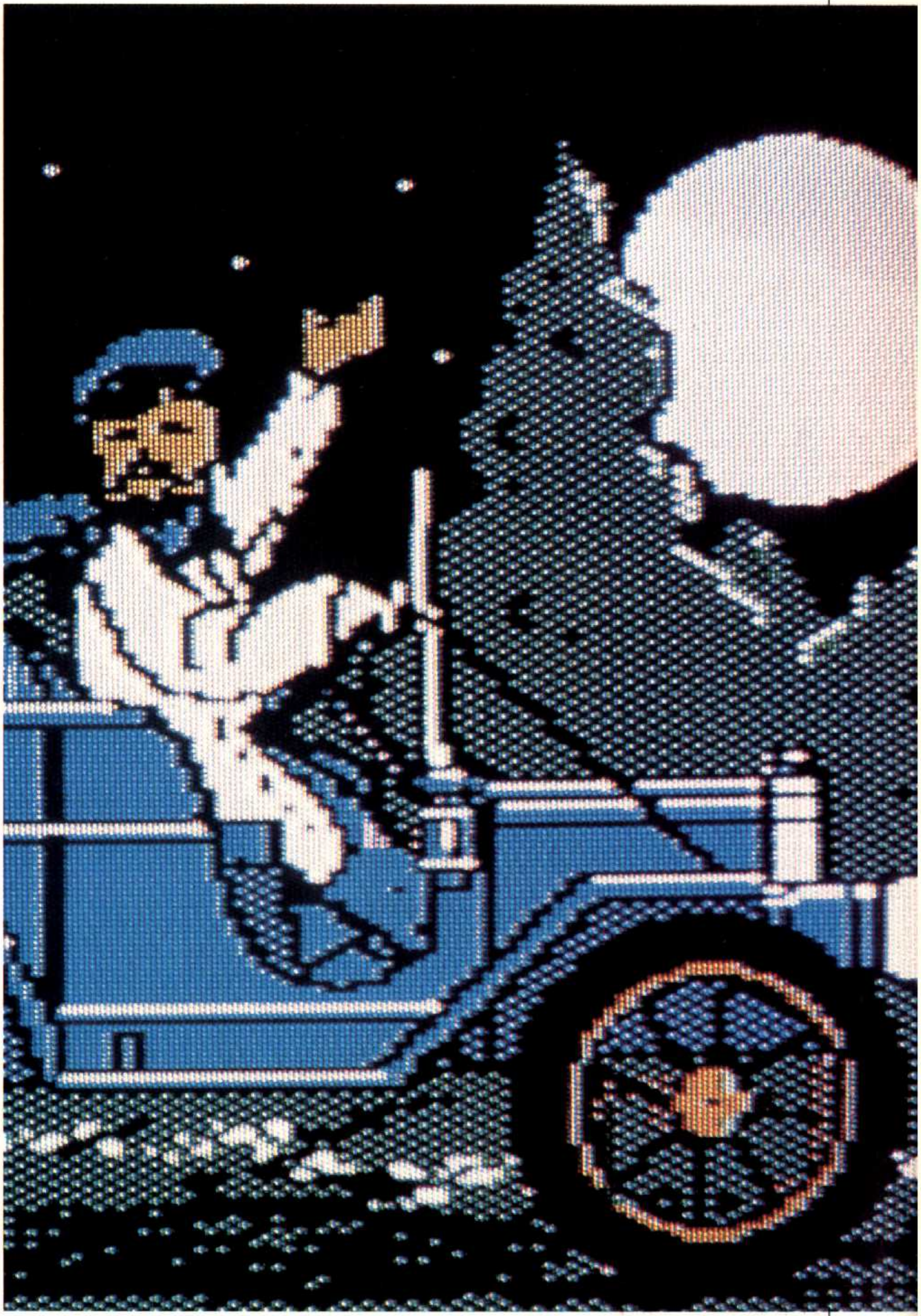
Software. As its name implies, *Movie Maker* lets you make animated stories on your computer, add background and sound, and even incorporate your work into your own programs. This groundbreaking program (which will be the subject of a *ComputerFun* feature story in next month's issue) was the first home animator, but not the last.

Computer animation works just like film animation—a series of images are flashed on the screen quickly, giving the illusion of movement. The software lets you draw each one of the images and then save the finished product to disk. This is generally in addition to all the usual options you would expect to find on graphics software that let you draw the pictures easily in the first place.

One of the new products to look for this summer is *Animation Station* from Suncom. This is also a graphics tablet, similar to Koalapad, with a program developed by Datasoft that includes animation in its option, at least for most systems. It will be available for the Apple, IBM PC and Commodore computers. *The Complete Graphics System II* from Penguin was developed for professionals. Many of the hi-res graphics in the Adventure International and Sierra On-Line adventure games were created with this software, but the home user can achieve excellent results as well. In spite of its complexity and sophistication the Penguin system is very easy to use and works well with a Koalapad.

But perhaps the most amazing new piece of graphics wizardry to emerge this year is the Gibson Light Pen soon to be available from Koala for the Apple, IBM PC and Commodore computer, and from Atari for the Atari computers. Designer Steve Gibson's program offers more options than any other graphics package for the home, and what's more, it allows you to work directly on the monitor screen with the light pen. You are given an extraordinary number of options and the ability to customize your own library of shapes and patterns. It also lets you animate your drawings.

Continued on page 76



Have Your Machin

Illustration: Lonni Sue Johnson

Start your own computer bulletin board and the world will access a path to your door.

By Suzan Prince

Birds do it, bees do it, even educated fleas do it—communciate with each other, that is. But while the debate over animal communication continues, and scientists teach monkeys to form sen-

e Call My Machine

FOR SALE
FOR SALE
L.S. JOHNSON

tences out of plastic shapes, man still has the edge in one unique form of getting out the word. As far as is known, man is the only animal who leaves notes.

It seems likely that from the beginning of human communication man has been beset by scheduling problems. Ugh-Ugh may have had an important message for Gruk, but if Gruk was out hunting and gathering Ugh-Ugh was out of luck. And by the time Gruk returned, chances are Ugh-Ugh had already been trampled by a woolly mammoth.

But besides these problems of one-on-one communication, there is the whole sense of community an efficient communications network helps establish. It would have been quite impossible, for example, for Gruk to personally inform every single member of the tribe of Ugh-Ugh's untimely demise. With a cen-

HES
HesModem I
commod

LEXICON LEX-11
ACOUSTICALLY COUPLED MODEM

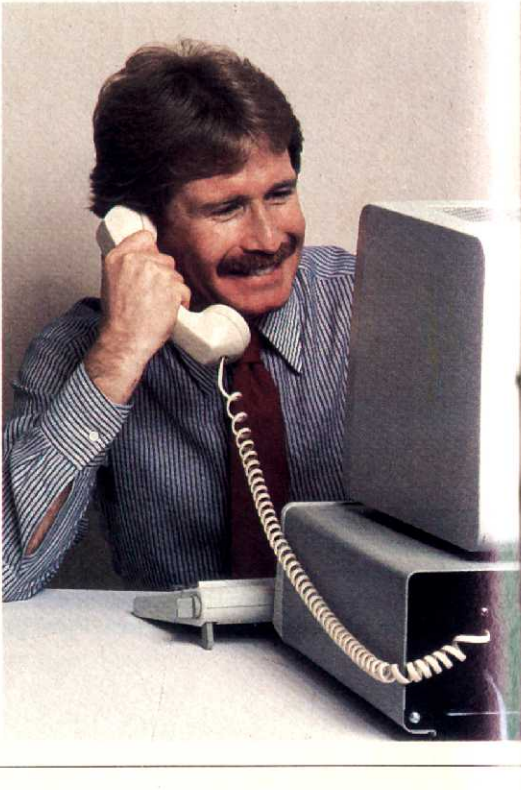
Modem Times

Top and center, the LEX-11 acoustic modem from Lexicon; above, the HesModem for Commodore computers from HesWare; far right, two Commodore modems, the C1650 (top) and C1600. Some modems allow combined voice and data capabilities.

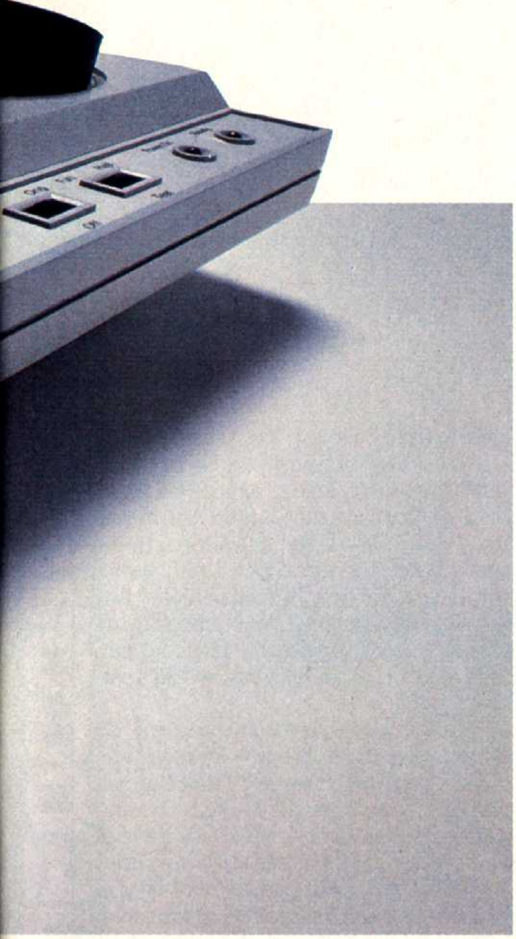
tralized information clearinghouse, though, all of Ugh-Ugh's distant sisters and cousins and aunts would know exactly where to find news of lost relations, and in no time flat they could descend on Ugh-Ugh's cave and divvy up his wordly goods.

The smaller and more compact the community, the easier it is to set up a centralized information clearinghouse. In olden days the barber shop and the post office were the most efficient data bases for small town America. But the transition to the fast-paced highly mobile society in which we live hasn't altered the need for very localized information centers. In virtually every supermarket across the country the bulletin board is as common as the automatic door.

Although the home life support computer terminal that will let you buy your groceries, do your banking and order airline tickets from the comfort of your living module is still off in the future, man has already taken care of the bulletin board. Computer bulletin board systems (BBSs) are sprouting up all over the place, and setting one up yourself is an easy matter. No matter where they live, computer users form a community unto themselves, and the BBS is probably the most efficient way for them to get in touch with each other. (We found it more efficient than the phone in preparing this story. BBS operator Ed Gelb, who we talked with for this article, has an unlisted number. A message on his BBS, though, got us a return call the next day.)



The bulletin board system is probably the most efficient way for computer users to get in touch with each other.



commodore
AUTOMODEM
Telephone Interface
Model 1650

VICMODEM
Telephone Interface Cartridge
commodore COMPUTER
Model 1600

To locate public access bulletin boards throughout the U.S. and abroad, try ***The On-Line Computer Telephone Directory****, a comprehensive listing published and mailed quarterly to subscribers ($19.95 per year); contact* ***J.A. Cambron Company****, P.O. Box 10005, Kansas City, MO 64111.* ***Free Software for Your Atari*** *is a book published by* ***Enrich/Ohaus*** *(1983), $8.95; it lists pages and pages of Atari BBSs and includes a section on how to start a network. Enrich/Ohaus also publishes similar books for Apple, Commodore, and TI users. To find out more about* ***The Source's Private Sector*** *services, contact Rich Plourde, national sales manager,* ***Source Telecomputing Corp.****, 1616 Anderson Road, McLean, VA 22102; (703) 734-7500. For the names and vendors of commercial BBS programs, try the* ***PC Clearinghouse Software Directory*** *($29.95) published by* ***PC Telemart Inc.****, 11781 Lee Jackson Hwy., Fairfax, VA 22033; (800) 368-4422.*

Unlike commercial network services such as The Source and CompuServe, which collect hourly access fees plus first-time sign-on charges, private bulletin board access is absolutely free. Callers only pay for the long-distance telephone costs between their computer and the system's. Communications hardware and software is also getting cheaper and easier to use, and the chance to talk with literally hundreds of fellow networkers daily is increasing as the number of new computer owners interested in long-distance chatter multiplies. Besides, once you start it's very tough to quit. Networking is irresistibly fun.

Perhaps you've already experienced the heady feeling of flipping a modem switch and dialing into an informal party line that lets users converse back and forth on an infinite variety of subjects. Through the miracle of modern telecommunications, the BBS lets you:

- find a job, start a business or a fan club;
- win friends and influence people;
- solve computer users' problems long-distance;
- help the handicapped;
- finish your homework with someone in a class three states away;
- discuss politics, religion, sex, philosophy or Kung Fu with people you couldn't possibly meet before the BBS.

But calling a remote computer is only one side of networking. You can easily start your own BBS. All it takes to set yourself up as a system operator (or "sysop" in the jargon) is an initial investment in the right equipment and software (relatively inexpensive, especially if you already own a computer), more than a little spare time and a good grasp of the technology behind networking, which is pretty straightforward.

For the caller, the BBS works like this: When a computer is properly connected

Continued on page 63

Gnusto Ozmoo

Infocom games are not instruments of the devil. No. They want *you to solve them. Really they do. It's all a matter of knowing what to look for.*

By Randi Hacker

The following conversation took place in a bank in New York City:

First Woman: So tell me what happened after I went home.

Second Woman: Well, we discovered a gold goblet and silver goblet in two rooms just off the barge room. Oh, and on the barge we found a papyrus scroll with some cuneiform message about the queen on it. Later, we practically tripped over the dessicated skeletal remains of some poor slob who was not as fortunate in his explorations as we were. We know we've got to do something with the bricks in order to find the Queen's burial chamber but we're not sure what yet. Also, we found a vast underground chamber where we had to break a priceless statue and haul it around in order to get into the inner sancti of Isis, Nepthys, Neutrogena, Curly and Moe, the ancient Egyptian gods.

Third Woman (and a very puzzled woman she was, too): I hate to intrude but I couldn't help overhearing. Where were you?

Second Woman: East 81st St.

This was, at least, partially true. But, while we may have physically been on 81st St., we were, spiritually, sporting pith helmets, carrying backpacks and exploring a pyramid that had been lost in the Egyptian desert sometime in the 1920's. Before you get cute and ask who could possibly be careless enough to misplace something as large, heavy and ancient as a pyramid let us inform you that this is a game. Not *just* a game, though. This is Infocom's *Infidel* and the whole story was just a means of illustrating how carried away you can get playing of these fine text adventures.

Not only can you take trips to exotic lands, you can also add colorful phrases to your drab vocabulary. Phrases such as "Gnusto ozmoo," for example, which in *Enchanter*anto means, "Enter the ozmoo spell in my spell book." What is the ozmoo spell? We can say no more about that, I'm afraid. Many valuable playing hints will be revealed in this story. What the ozmoo spell does isn't one of them.

Unlike other text adventures, Infocom games have no pictures. On screen, that is. This makes them something like the old radio shows. (You remember radio.) Radio shows could take place anywhere without the building of elaborate sets. All that was needed was a few timely sound effects and one minute you could find yourself on the frozen tundra of the Northwest Territory and, a split second later, you'd be basking in the sun of a Carribean island, birds of paradise chirping in the background and the sound of some attractive person slurping a pina colada on the beach. In addition, the appearance of any character or location was all up to you. No producer or director was able to impose his or her idea of what someone looked like on your own—and certainly more accurate—idea. And this served to make horror broadcasts more horrible. Your own monstrous creations and embodiments of evil were far more hideous than anyone else's idea of what would scare you.

Similarly, in Infocom games, the action all takes place wherever you choose, all the characters look the way you know they ought to and no one's characters look like anyone else's even if you're playing the game with a partner. In this way, Infocom games become *your* games. You feel a certain possessiveness about them. And you become really, really involved in their intricate plots.

But just because you feel a certain personal attachment to them—a feeling that they're closer to you than even your immediate family—doesn't necessarily mean that you can force them to bend to your will the way you can with younger siblings. It also doesn't mean that they're easy to solve. Quite the contrary, in fact. They can be very frustrating and no amount of threats or blackmail will make them more accommodating, either. Of course, the more Infocom games you play, the more familiar you become with certain standard little tricks that the authors slip into each one. And while each game creates its own world and

Illustration: Frank Riley

INFOCOM
Riley

SUSPENDED
A Cryogenic Nightmare
INFOCOM
SUSPENDED

Text of skill

One of the best things about Infocom games is the support material that comes with them. These items range in lunacy from Ebullion tablets (the murder weapon?) to post cards from outer space.

PLANETFALL
THE PATROL'S LOOKING FOR A FEW GOOD ORGANISMS.
Greetings from
PLANETFALL
INFOCOM

denizens, there are several useful things which apply across the board and which, if you know to look for them in advance, can help you get out of a tight spot without resorting to ripping the diskette out of the drive and using it as a hi-tech cocktail coaster.

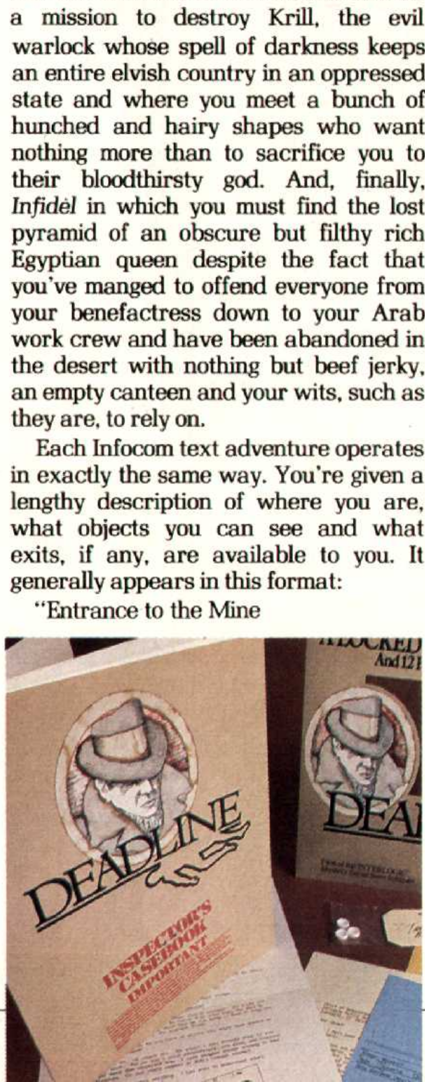
But first a few words about some of the Infocom plots. While each game spins its own intricate plot, you can generalize safely when you say that in each game you, incredibly innocent person with a mission, are dropped into a situation which needs resolving. How you resolve it is the key issue here.

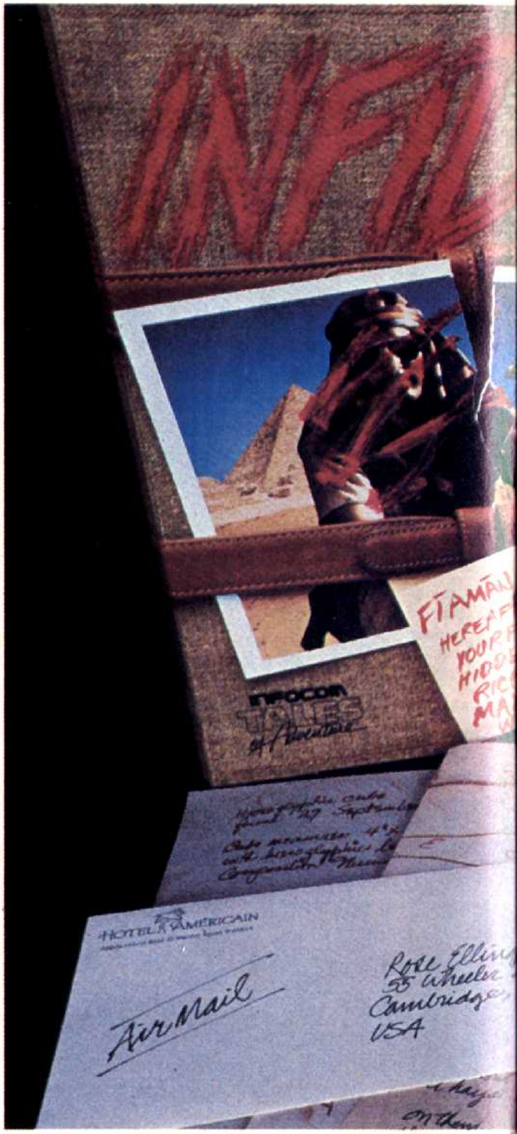
Just because Infocom games are all text doesn't mean they lack excitement. Here are a few examples of the sorts of things you'll encounter when the disk hits the drive:

In *Planetfall* you are a lowly Ensign Seventh Class on the doomed space ship Feinstein. You have to explore a deserted space complex in order to find out what your task is. You are armed only with a towel, some colored goo and a can of spam. In *Deadline* you are an intrepid, if clumsy, detective trying to gather evidence to incriminate someone (Ms. Dunbar, the loyal but shifty amanuensis? Mrs. Robner, the unfaithful wife? George, the dissolute son with the odd taste in music?) in the murder of Mr. Robner, business tycoon and philanthropist. In *Enchanter* you are the most ineffectual of sorcerors sent on a mission to destroy Krill, the evil warlock whose spell of darkness keeps an entire elvish country in an oppressed state and where you meet a bunch of hunched and hairy shapes who want nothing more than to sacrifice you to their bloodthirsty god. And, finally, *Infidel* in which you must find the lost pyramid of an obscure but filthy rich Egyptian queen despite the fact that you've manged to offend everyone from your benefactress down to your Arab work crew and have been abandoned in the desert with nothing but beef jerky, an empty canteen and your wits, such as they are, to rely on.

Each Infocom text adventure operates in exactly the same way. You're given a lengthy description of where you are, what objects you can see and what exits, if any, are available to you. It generally appears in this format:

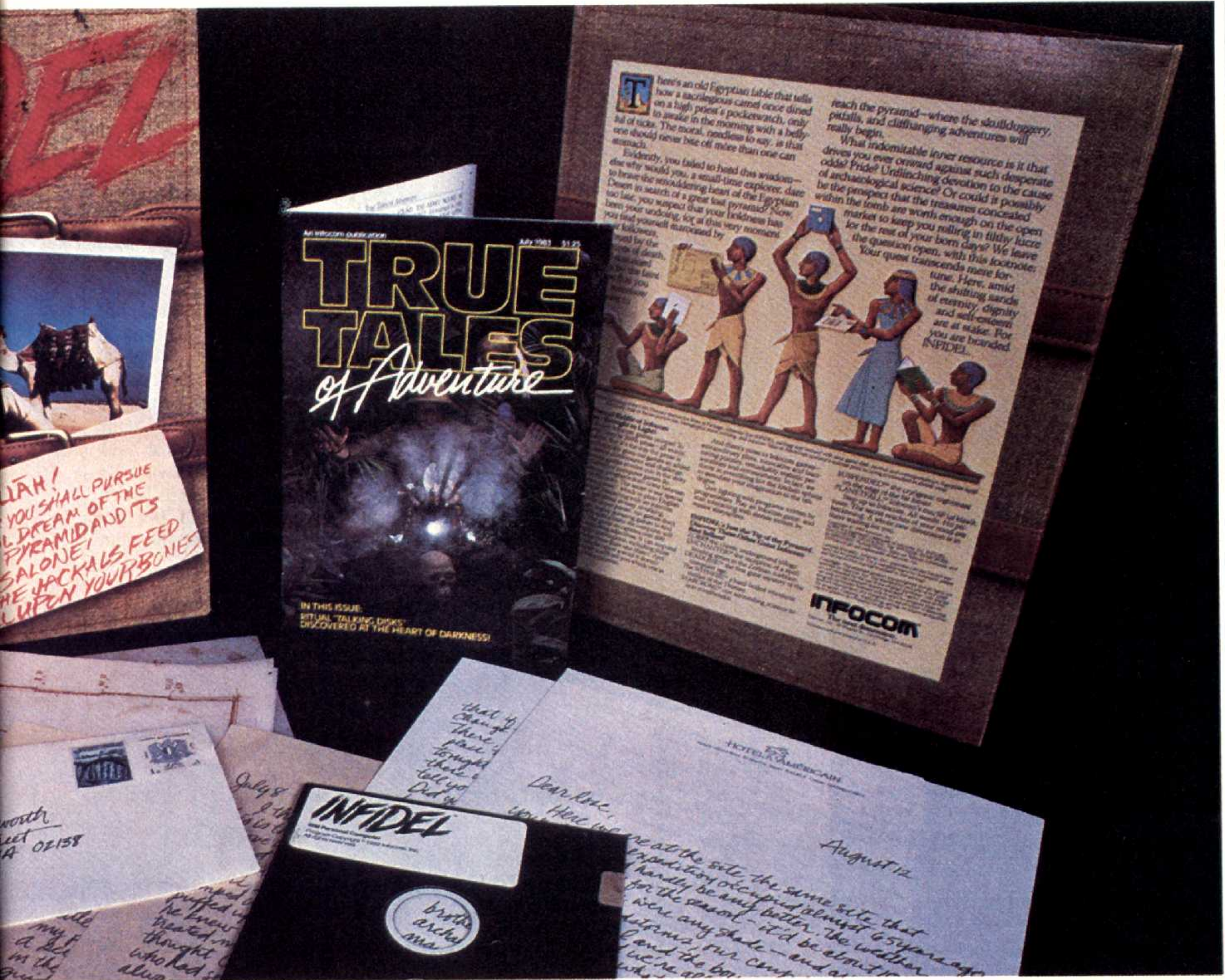
"Entrance to the Mine





This is the entrance to a mine. It's dimly lit by torches. Rotten wood planks support the tons of earth on top of you. They don't look too solid. In fact, they look as if they might collapse any minute. A miner's cap is on the ground and a pick axe is stuck into a vein of coal. A half-eaten lunch suggests that the occupant fled in some haste.

You've been abandoned in the desert with nothing but beef jerky and your wits, such as they are, to rely on.


TRUE TALES of Adventure
An Infocom publication
IN THIS ISSUE: RITUAL "TALKING DISKS" DISCOVERED AT THE HEART OF DARKNESS!
INFOCOM
INFIDEL
YOU SHALL PURSUE
DREAM OF THE
PYRAMID AND ITS
ALONE!
JACKALS FEED
UPON YOUR BONES
Dear Rose,
August 12

There is a pair of pantyhose here."

Once you're visited a room, however, descriptions are more abbreviated, so if you re-enter, you're likely to get only "Mine Entrance" or "Jayne Mansfield's Living Room" and no further description. Unless. And here we've deftly segued into the first general rule which is: **Important things are often highlighted in some way in the description of where you are. For example:**

"Saks' Fitting Room

Your senses reel and you suddenly find yourself in the midst of a throng of at least 25 screaming matrons all in various states of undress. Mirrors line one wall. A row of benches surrounds the room. A sallow, sour saleswoman eyes you viciously. Clothes are stewn about the area.

On the floor is a curious slip of paper that appears to have writing on it."

The fact that the slip of paper has a paragraph all its own—like the pantyhose did in the previous example—indicates that it is probably worth examining. Sometimes it will turn out to be nothing more than a self-

Yes, friends, you can enlist the computer as an unwitting accomplice in your search for the ultimate solution.

The challenge was issued eons ago, from light-years away. And only you can meet it.
STARCROSS
INFOCOM

Ten General Tips

You say the story was too vague? You say you want something more to the point and juicier? Here you go, then. These are tips for specific Infocom games. Never mind which ones. You've got to do something for yourselves.

1. Dying can be productive as long as you do it correctly.
2. Close the cover before striking.
3. Opening personal mail is not a federal offense. It is, in fact, a good idea.
4. Freud was right. Dreams do have hidden meanings.
5. Don't eat the celery.
6. Don't sleep on the cot in the infirmary.
7. No matter how corny it may seem, the cleesh spell is not a joke.
8. Don't ask Stiles about Virginia.
9. Keeping up with current events is always a smart thing to do.
10. Wave at the plane. It's lonely at 36,000 feet.

---

congratulatory advertisement for Infocom games. More often, however, it will be significant.

Not all clues and salient facts are that clearly set off, though. This is why the second general rule is to **read the descriptions carefully**. Clues are often hidden in the body of the text so your Evelyn Woods speed reading/skimming course will do you no good here. Bear in mind, however, that sometimes the important facts don't surface until after you've performed an action more than once. Be alert for cues from the computer that will, in some way, suggest that you try what you've done again. For example, say you find yourself trapped in a Safeway after closing. Your only exit is being blocked by a mutant cashier. You've tried chucking frozen orange juice cans at her three times. Each time, she has backed off somewhat but hasn't fled. Try it again. Something like this might happen on your fourth attempt:

"Safeway
As you raise your hand to toss the last can of frozen orange juice in your possession, you notice that the head mutant cashier is eyeing it with interest. It has no price on it."

What you might try to do, then, is offer the can to her. This could create a temporary diversion during which time she will ask Anthony for a price on this item and you can make your escape. The clue is there. You've got to look.

While we're on the subject of gleaning clues from the text, you should be aware that the computer can be used to your advantage. Yes, friends, you can enlist the computer as an unwitting accomplice in your search for the ultimate solution. Let's say, for example, that while touring the castle, you meet a dwarf and you type in "Use scalpel on dwarf." Infocom games are sticklers for details. This means that the computer will often want a clarification of your command. It might, therefore, come back with something like "Which dwarf do you mean? The dwarf with the inflamed appendix or the dwarf with the enchanted contact lenses?" You may not have known that there was, in fact, a dwarf hanging around who had in his possession magical contact lenses but now you do and armed with this information, your search becomes all the more purposeful. This sort of strategy is

Continued on page 74

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You may not find out just what your purpose is in any one of these games until you're halfway through but the means are often more fun than the end.

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You Are Now Getting Sleepy

Everyone else may be jogging but Synapse's Ihor Wolosenko has new plans for Relax.

Interview by George Kopp and Randi Hacker

Ihor Wolosenko was not always as you see him now (opposite page). Most of the time you'll find him standing up. Ihor, a true Renaissance man, has been, at various times, a physical therapist, photographer, producer and director. Right now he's president of Synapse and, along with his team of designers, is a creative force behind the development of *Relax*, a biofeedback system for your home computer.

CF: What's in the Relax program?

IW: Well, there are four major components: First there's the headband which has sensors on it that measure the level of muscular activity in the frontalis muscles of the forehead. The reason that this has been used as a clinical method of measuring stress is that the forehead muscles generally reflect the overall tension in the body and they're generally immune to postural changes. Because you're so expressive in your face, you tend to mirror all the other changes that are going on in your body but, at the same time, the fact that you may move your leg or arm really doesn't affect your forehead that much. So it's a very good base indicator of the level of tension. The second component is the interface to the computer. We had a guy design the hardware who is an expert in biofeedback. We told him what we wanted to do and he came up with the interface which, incidentally, other mystery modules will eventually hook up to.

CF: What mystery modules?

IW: You'll see. Anyway, what we ended up with was the equivalent of a piece of professional equipment that might cost anywhere from $5,000 to $7,000 and which gives you the results that the more expensive machine would. The third part addresses the problem of how to integrate that mechanical refinement into something that would be meaningful in someone's life. So we hired a psychologist who has written five books on stress and has been very involved in stress management problems to write the book that goes with the *Relax* program. The book essentially allows people to profile their own lifestyle and begins to suggest changes that would make their use of the system something that could be integrated into their own lives. For example, let's say you have a phobia about speaking to crowds. You would go through the relaxation process with the tape—that's the fourth element—and you would imagine certain things about a speaking situation, specific things: bodily feelings, audiences, physical things about the room and so forth, and while you were doing this, you could monitor your stress level and work on relaxing yourself at the points that make you most tense.

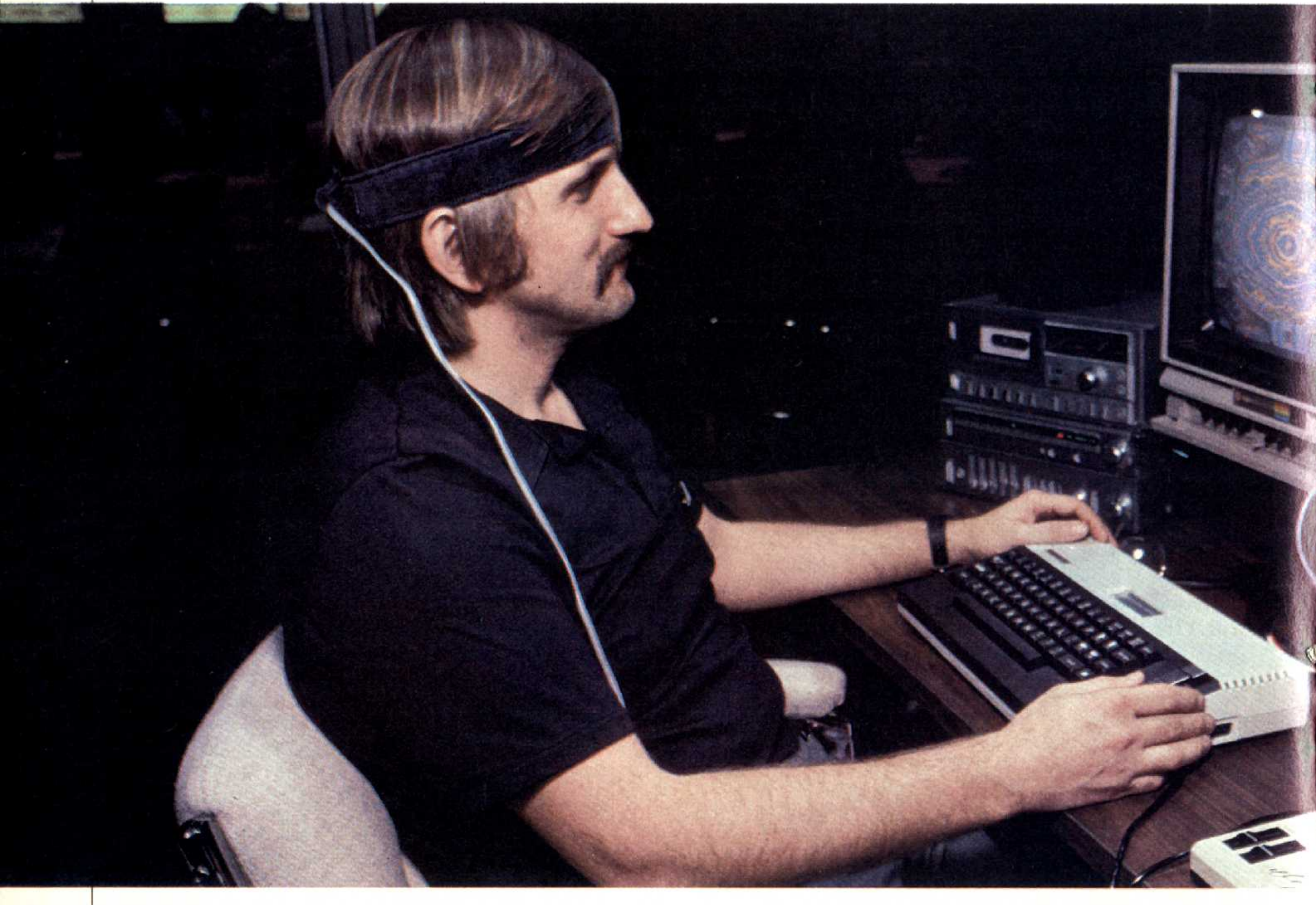
CF: How would you monitor your stress level?

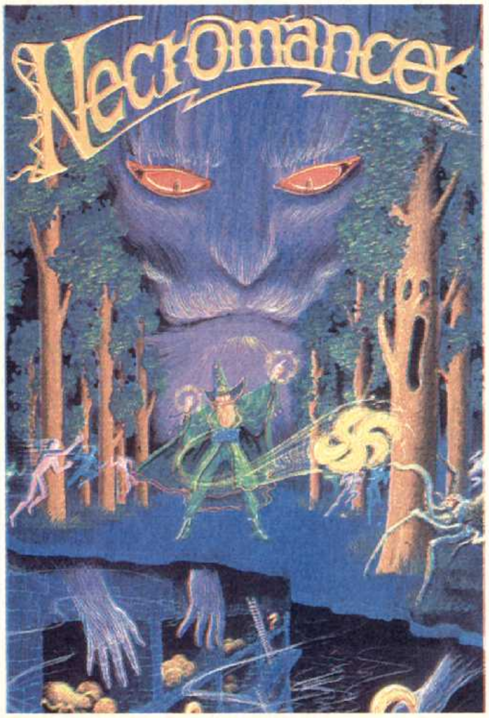
IW: Using the graphing program. This is essentially a histogram or moving chart recorder. Up one side is a set of numbers that indicates your level of tension from one to 150. The trace moves across the screen, going up and down depending on how tense you are or what your reaction to something is. It picks up this input from the headband with the sensors. You can take a sample of your stress

Photos: Janet Fries

level every second, every few seconds or at longer intervals. But, most importantly, you can watch a graphic representation of exactly how tense you are and you can watch yourself control this tension, dropping it lower and lower as you become more and more relaxed. You can slow down the speed at which the trace moves across the page so you can fill a screen with as much as 34 minutes worth of information or you can speed it up and that same screen will fill with only a second's worth of information. The tenser you are, the higher the needle rides and it lowers itself the more relaxed you become. And you can adjust the base level so that you can relax more and more. You can even print out the information if you want and save it.

There are other programs, too. It's not just a graph. Some people enjoy seeing a linear relationship between their inner psyches and what's happening on the screen, but others don't. So we've got four other ways to illustrate tension and provide relaxation. Some people will like the kaleidoscope effect. The kaleidoscope portion generates colors and forms depending on your stress level. Then there's a face program. This face starts out all scrunched up and relaxes as you relax until, eventually, it's smiling. The fourth program is a balloon ride that takes you over different types of terrain depending, once again, on your stress level. The *Relax* program gives people a choice of relating to what they're most comfortable with.





I wanted to make visible things that are mysterious about the self and help you somehow change your life for the better.

At the same time as this visual stuff is going on, the audio tape guides users through these various presentations. This is all very different than a self-help book in that you can actually integrate what you've learned and see the results. For the first time, you can graphically see whether or not you've understood how to help yourself. The computer gives you the opportunity to be interactive with a system that shows you what you're doing and helps you along. This takes it a step further than simply an intellectualization of the process. This is really bringing the computer into something that's exciting. For me, at any rate.

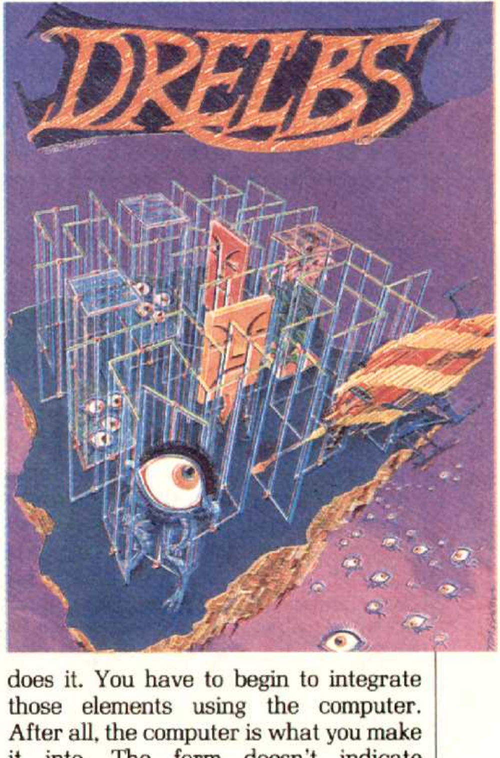
CF: What brought Relax about?

IW: A couple of things. There are two really popular trends in the marketplace today: personal healthware of one kind or another and computers. Then I asked myself, "At what point do those two intersect and how can I create a new product cateogry that uses them both?" I also looked at leisure time activities. Part of the time is engaged in playing or watching competitive games and the other part is simply sitting back, relaxing, getting in touch with yourself, going out to the country. This whole category really hasn't been accessed by computers. Computers thus far have been used for data bases, speadsheets or games of a particular nature.

Head(band) Games

At left, Ihor dons the sensor headband that feeds his tension level into the computer. Above, Necromancer, a Synapse game involving enchanted trees and to the right, Drelbs which redefines the word "window."

How do you get into that other part of the person's life and make it something the computer adds to? How can you add to a person's life by using this technology? You can't simply go out and say, "Hey, listen, you're stressed out. You're living in this very fast environment and you really shouldn't. You should take the time out and go up to the country." Everybody agrees but nobody does it. You have to begin to integrate those elements using the computer. After all, the computer is what you make it into. The form doesn't indicate whether it has positive or negative valence—the application does that. I wanted to come up with something that wasn't just another me-too product. I wanted something that in some way stretched what had been done using a computer. I wanted to make visible things that are mysterious about the self. And I wanted some sort of tool that would make that information available, that would help you somehow change your life for the better.



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Databaseline Service

If those new $75 shoes have done nothing, yet, try computennis.

By Ann Liguori

Tennis has been around for a long time and has caused a great many battles to be fought not only on courts of clay or grass. For example, the King of France sent tennis balls to Henry V which was taken as no small insult and which, we're told, resulted in the Battle of Agincourt. Later, Henry VIII played tennis at Hampton Court while his soon-to-be-ex-wife Anne Boleyn was being relieved of her head. Whether or not he won is a queston that history hasn't answered but it is pretty safe to assume that he did, being that he was king and all and had several executioners at his beck and call.

While these historic people may have had most of the accoutrements that present-day players use—tennis racquets, balls and a vast storehouse of epithets to shout when an easy shot was missed—what they didn't have was Adidas shirts, the Virginia Slims Tournament and computennis.

In all probability, they didn't miss the Adidas or Madison Square Garden but who knows what heights they may have reached had they had computennis. What is computennis? Just what it sounds like—the marriage of high technology and a classic sporting event. Computennis is rapidly replacing the need for tennis statisticians to hand-tabulate important matches in order to determine why one player beat the other.

This revolutionary link between court and computer was developed in 1982 and is called the CT 120. Physically, the CT 120 is very small (it weighs only four pounds), resembles a typewriter and fits into a briefcase. In addition to a keyboard, the CT 120 has an LCD

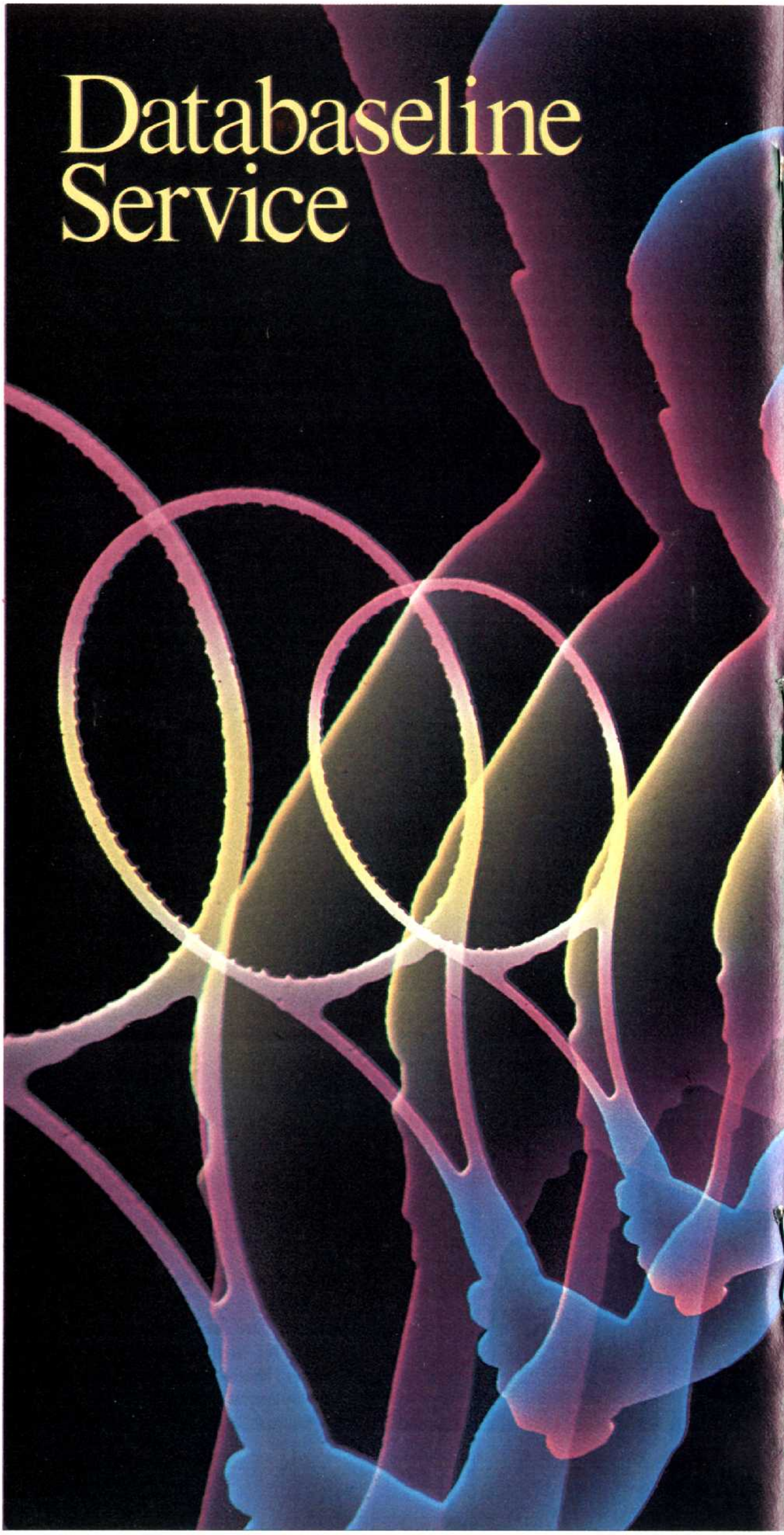

Photo: Peter Simon

display screen for checking scorer/operator stroke entries, a CMOS memory for 40 hours of battery driven power, a microprinter and a microcassette for storing statistics from an entire match.

The CT 120 can be an invaluable aid to professional and amateur players alike. It allows the operator of the system to gather detailed information on a specific match at lightning speed. The resulting reports can be as simple to read as an on-court match statistic printout or as complex as a three-to-100 page-booklet which would be given to the player who wanted to sit down and analyze in detail every little groundstroke and net shot of his or her game.

The person who operates the computennis computer must be trained in the intricacies of the system. It can take as many as three hours to fully understand how the system works and many more hours of extensive practice to build up speed in entering the data. After all, entering the serves, groundstrokes and other plays must be accomplished without looking at the keys. The operator's eyes must never leave the action on the court.

While Lendl himself blamed his loss on a double fault, the computer statistics experts disagree with this.

Although operation is not a piece of cake, there are certain privileges and advantages that go along with mastering the intricacies and becoming a member of this elite group. The person who operates computennis must, of course, have the best seat in the house. He or she must be able to record accurately the quality of every serve—whether it was wide, long, an ace, returned and put into play, weak or a fault. The quality of the return of serve must also be entered and a notation must be made as to whether it was forehand return, backhand, approach shot, passing shot, drop shot or lob. To further complicate things, the operator has to then make a note of the zone into which it was hit—this can be any one of five areas on the court—and then record which one of six different qualities of return shot this resulted in. Each serve and initial return is a combination of these elements. And we haven't even discussed the rest of the point yet.

As you can see, computennis can provide players with essential information that can help them recognize their weaknesses and strengths and direct them to the areas which need the most work. It can also explain why one player beats another when, to the naked eye, it would appear that both players were playing equally as well or, even worse, that one player should have had an easy victory.

To illustrate the complexities of a simple game of tennis, let's look at the final match between Jimmy Connors and Ivan Lendl in the US Open. Let's analyze it from the standpoint of a computennis operator:

While tennis observers and Lendl himself blamed his loss primarily on a double fault during a key point in a key set, the computer statistic experts from computennis disagree with this reason for the match's outcome. Obviously Lendl's double fault on an important point didn't help but computennis data reveals that the groundstroke battle between these two groundstroke powerhouses was, statistically, speaking, the real Waterloo. Connors won a total of 144 points compared to Lendl's 127 points won; both players had a similar number of winning shots—33 for Connors and 34 for Lendl—but Connors had 14 fewer groundstroke errors (65 total) to Lendl's 79. What the match boiled down to then was essentially a series of crosscourt battles fought between Lendl's forehand and Connor's backhand. In all, Connors ended up with 26 backhand errors and 39 forehand errors while Lendl had 38 backhand errors and the same 39 forehand errors. Stroke by stroke, Connor's backhand prevailed over Lendl's forehand.

In as far as service errors go, Lendl's service problems were present throughout the entire match and not only

OMEGA
RATILOVA
GAME
NIKA
MATCH

Micro pros

Computennis can help the pros win. Pictured here are (left) Billie Jean King, (above) Yannick Noah and (above) Martina Navratilova.

Computer analysis can make major contributions to your confidence and mental game and give you the edge.

at the time of that crucial double fault. His first serve effectiveness was a very low 28 percent. Out of 154 first serve attempts, less than half (71 or 46.1 percent) were put into play and of these, he won only 43 points of which only 18 were aces. Out of those same 154 first serve attempts, Lendl won only 25 points when Connors returned the ball. Compare this to Connors' statistics: He got a whopping 75 percent of his 117 first serve attempts into play and won 53 points which gave him an overall first serve effectiveness rating of 45 percent.

Connors and Lendl have been monitored by computennis in matches other than this final one in 1983. Here are some other statistics that may interest you. They were all reached using computennis.

- Although Lendl wins a higher percentage of his first serve points when his service is put into play (75.4 percent as compared to Connors' 67.4), Connors' overall first serve effectiveness is higher (46.5 percent as compared to Lendl's 40.2 percent). These data reveal that Connors wins a greater number of points from his first service.
- Connors exerts extraordinary pressure on his return shots and wins a high percentage of these points. In the category of first return points won, Connors comes up with a 37.8 percent average as compared to Lendl's 36.7. Lendl is not as effective as Connors on return points.
- Connors has the best statistics at net and he comes in on what are generally better approach shots. Connor's win/error ratio at net (the number of winning shots vs. the number of errors both forced and unforced) is 1.88 as compared to Lendl's 1.35. This may in part be due to the fact that Connors takes fewer risks when approaching the net. He leads in advance-to-net statistics with 30.7 percent effectiveness as compared to Lendl's 22.7.

Now that we've seen what computennis can do to help the pros, you may well be asking yourself what computennis can do to help your game. The answer is plenty. Computer analysis can make major contributions to your confidence and mental game by pinpointing areas of strength and weakness not readily picked up through mere observation.

Computennis can also give you strategic edge. It can provide you with information that tests different strategies against different types of

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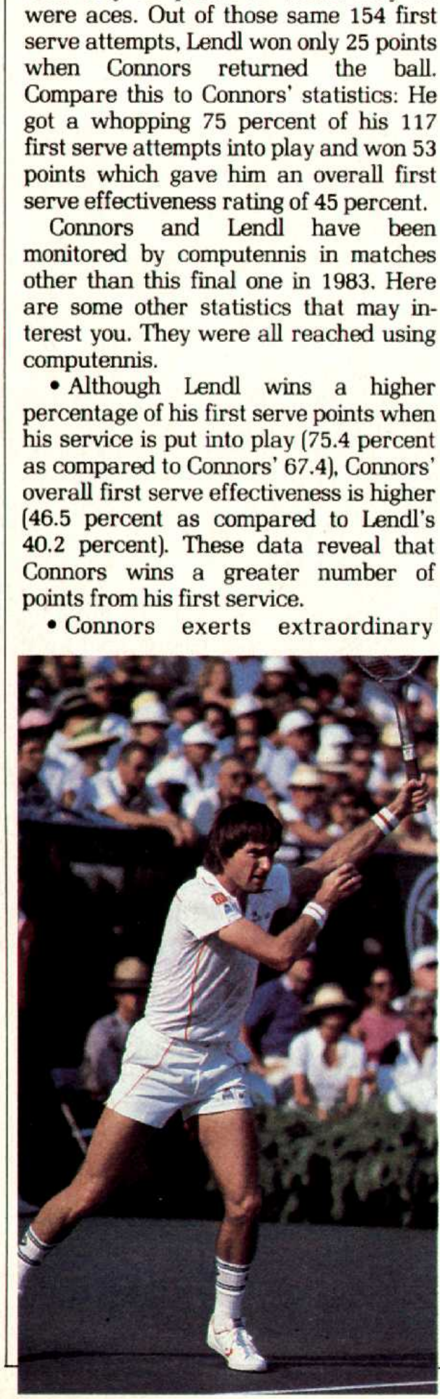

Computennis anyone]

Among the players whose games have ben statistically analyzed by computennis is Jimmy Connors (left). Computennis, however, had nothing to do with John McEnroe's Gillette commercials.

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All On Boards

How all these new enhancement devices stack up.

By Robert Alonso

When we say that a computer system is expandable that usually conjures up an image of more and more pieces of equipment spread out over desktops, shelves and any other available surface area like an electronic urban sprawl. Hi-fi and camera freaks know this feeling well, as gadget piles upon gadget in the quest for the ultimate system. It's not the case with computers, though, because so much expandability actually goes on *inside* the original box. One of the best ways to enhance a computer is by adding on circuit boards.

Open up your computer and you'll see it's already a collection of circuit boards. Designing one is painstaking task, but once the design is complete they are relatively inexpensive to manufacture. Part of the reason for that is the availability of the most important component of a circuit board—the silicon chip—which in its raw form is found in abundance as sand.

Well-tempered computer

Circuit boards can be custom-tailored to perform specific functions, like increasing memory storage capacity, adding sound or voice synthesis or enabling a computer to run any sort of printer. So if your computer doesn't quite meet your requirements, don't despair. Chances are there is a board out there made specifically for your needs.

Not all circuit boards live up to the claim of their manufacturers, though, so when you go shopping for one always insist on a demonstration. Paying full price in a store that will demonstrate it may be cheaper in the long run than simply buying at a discount or ordering through the mail. If you already know what a particular product can do, though—say your friend has one or you've seen it at school—by all means look for the best price. We've tested out all the boards in this article, and our evaluations should be helpful to you if you're interested in purchasing any of these products.

Memory expanders have always been one of the most useful and necessary items that computer users buy. One such expander for the Atari 400 and 800 home computers has so many small chips packed together in a small space that it resembles a mosaic, and is appropriately called the Mosaic 64K Select (Mosaic Electronics, P.O. Box 700, Oregon City, OR 97045). The 64K Select gives owners of Atari 400 machines the ability to run all Atari 800 software, and can be used with the 800 to make it a workhorse of a computer.

You're probably aware that a 64K computer doesn't give a full 64K of usable RAM, so a logical question would be, does the 64K Select give you a full 64K? The answer is that it does, but in an unusual way. Directly, the 64K Select delivers about 38K of memory for BASIC programs. The remaining memory is delivered in what's called a "bank selectable" format.

Bank selecting is a process by which a computer can use more memory than its operating system allows it to see at any given moment. This is accomplished by dividing the extra memory into equal chunks called banks. A computer can usually see only a few of these banks at a time, depending on which computer it is. If you have more than the normal number of banks, they can then be switched in and out either by using a program that enables and disables a given bank at a given time or by having a switch in your computer.

The banks can be used to store data in machine language but not in BASIC. The reason for this is that BASIC requires all memory locations to be contiguous—that is, they all have to be connected. Since the banks are switched in and out, they are of no use to BASIC. BASIC requires a smooth highway—any potholes and it won't work.

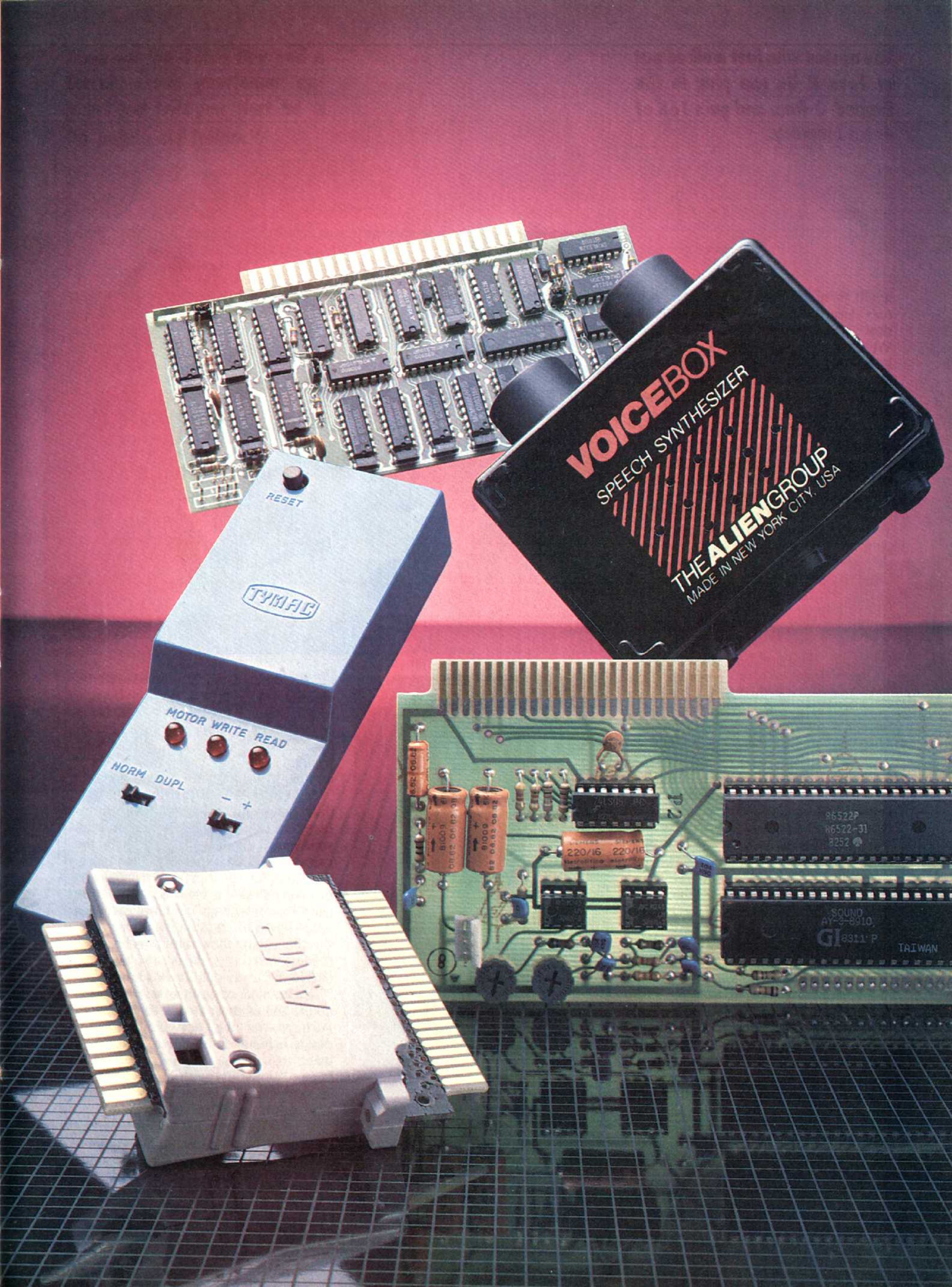
Disassembly language

The Mosaic 64K Select is not a plug-in miracle worker. The bank selection process can eventually be understood, but what really makes the 64K Select difficult to use by beginners is that to install it, you have to completely disassemble your Atari and even remove a chip. Although the complete procedure is outlined both by text and photos for the Atari 400 and the Atari 800, it hardly qualifies as a pleasant pastime for a Saturday afternoon.

If you're handy with tools and you own an Atari 400, the 64K Select might be a worthwhile purchase since it gives you free access to the vast amount of 800 software available. If you own an 800 the 64K Select is of limited value. It will let you run larger *VisiCalc* files and expand your word processor's working space, and it does increase your BASIC memory a bit. In conclusion, though, it's probably more trouble than it's worth. Even if you're a 400 owner there is one additional drawback to the 64K Select—price. At $199 suggested retail the board costs about the same as an Atari 800 (which, as we all know by now, can be hooked up in 26 seconds). The 800 version of the board, by the way, requires an additional cable which sells for $29.

Some add-on manufacturers have

Photo: David Arky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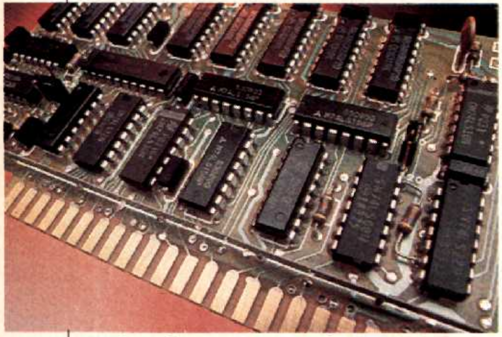
R6522-31
8252
SOUND
AY-3-8910
GI 8311 P
TAIWAN

The novice who just walked out of Toys R Us can plug in the Expand-O-Ram and gain 16K of extra memory.

opted to name their products in cute and descriptive ways. One such product is the Expand-O-Ram by Micro-Ware Distributing (1342 B Route 23, Butler, NJ 07405). The Expand-O-Ram is a 16K memory expander for the VIC-20 that features two switch-selectable cartridge slots, a reset switch and the capacity to make backup copies of program cartridges. Even at a retail price of $119 (which is more than the VIC itself), it is a product that delivers what it promises.

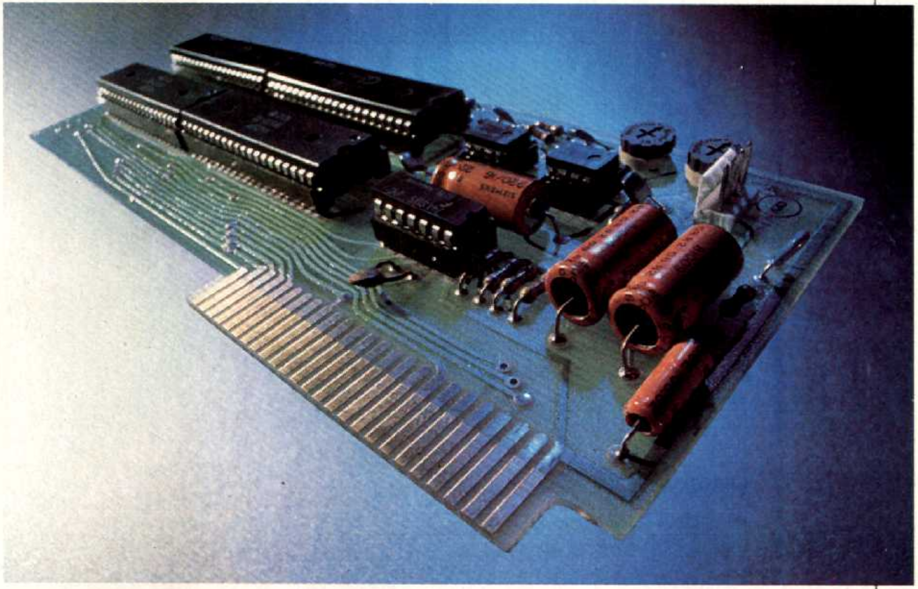
The novice who just walked out of Toys R Us clutching a new VIC-20 can plug in the Expand-O-Ram and immediately gain 16K of extra memory for BASIC or machine language programs. There's no fancy coding to perform and no new concepts to learn—simply plug the board into the back right hand cartridge slot. The extra 16K often comes in handy, but an even more handy feature is the reset switch. This was included for POKE-intensive programmers who have frequent program crashes. Just press the reset switch and type in the simple lines included in the manual and the crashed program is restored. This feature will often save hours of work, retyping and hair-tearing.



The only flaw with the Expand-O-Ram package is the documentation. Fortunately, the casual user can just insert the board into the cartridge slot and it works. For those who want to take advantage of the other features, like the backup and examine option, the documentation is a nuisance. The backup option is barely hinted at in the manual and there is no step-by-step tutorial on how actually to do it. Once confronted with the problem, however, Micro-Ware was very helpful and promptly sent me a step-by-step sheet on how to back up my cartridges.

Micro-Ware also distributes a product called the Universal Tape Interface and Duplicator. If that doesn't tell you enough about the board, maybe the name should be expanded some more. The Tape Int, for short, is advertised as an expense-saving device that lets the user interface any cassette recorder with the VIC-20 or Commodore 64, thereby saving the cost of purchasing a Commodore datasette. At a retail price of $49, it hardly qualifies as a bargain. The Commodore datasette retails for about $69 in most stores that stock it. Perhaps, as the ads indicate, this device is instead "for the user who may want to start a software business at home." Hopefully with his or her own software and not somebody else's copyrighted work!

In spite of the fact that the Universal Tape Interface has an audio enhancement circuit, parity switching and a



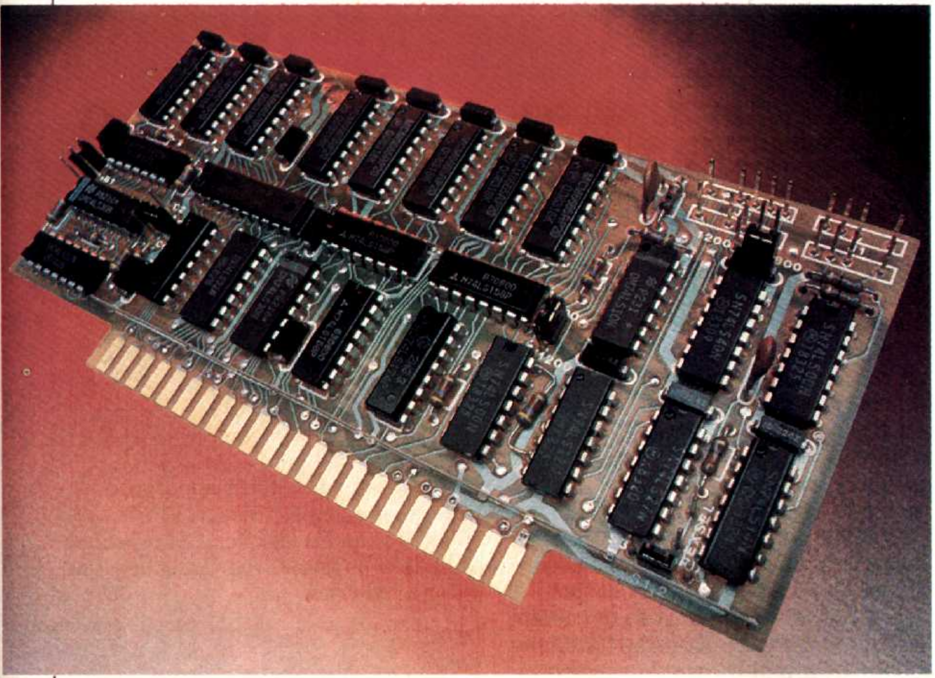
C64-LINK
RTC
AMP
RTC
505188
This Side Up

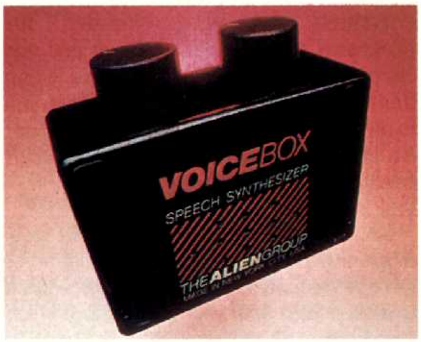
Three Ring Circuits

Top, the Mockingboard, which gives sound and fury to Apple computers. Far left, another view of the Mosaic 64K Select. Bottom, the C-64-Link for the Commodore 64.

Photos: Andrea Brizzi

Hook up the Voice Box and a Lincoln-esque gentleman appears and tells you that he is "a handsome fellow."





RESET
TYMAC
MOTOR WRITE READ
NORM DUPL
– +

reset button, it still does not perform as well as the Commodore datasette. When experimenting with the interface, I encountered many error-prone loads and saves and found the device to be less useful than I first expected. The documentation is impeccable, but fails to compensate for the inadequacies of the interface board. As a cassette *duplicator* it may be useful, but as a cassette interface it doesn't live up to expectations.

One of my favorite C-64 add-ons is the Voice Box by The Alien Group (27 West 23rd Street, New York, NY 10010). The Voice Box is a rectangular black box that costs about $129 and fits snugly into the back lefthand user port on the Commodore 64 or VIC-20. As the name implies, the Voice Box gives your computer speech. Not only speech, though—it also gives your computer song (with additional software).

Hook up the Voice Box and an Abe Lincoln-esque gentleman appears on the screen and tells you that he is "a handsome fellow." With the supplied software he'll repeat whatever you type on the screen. What his voice lacks in quality he more than makes up for in fun.

Software is available for use with the Voice Box or you can program your own. You can adjust the volume and pitch by turning the built-in knobs and you can hear the voice through either the built-in speaker or your own extension speaker that can be plugged into an earphone jack.

The Voice Box software lets you operate it without any knowledge of programming or hardware design. The Alien Group also sells a program with several songs that the "Alien" sings to you in sync with accompanying music including "When I'm 64," "Let It Be" and "Wabash Cannonball." This program is a lot of fun. It allows you to modify the existing lyrics or music to just about anything, and it also lets you create your own music and save it to disk or cassette.

The documentation is enough so that even the neophyte can program his or her own lyrics in no time at all. The manual says that it is possible to use BASIC to make the Voice Box say something, but that for very long dissertations, better sound quality is achieved using Machine Language. Sample BASIC programs are fully documented.

Continued on page 78

All Talk And Action

Top, Mosaic's 64K Select for the Atari 400/800. Below it, left, the Alien Voice Box for the VIC-20 and C-64. Right is the Universal Tape Interface and Duplicator, also for the Commodore computers.

INPUT/OUTPUT

Q **I am thinking about getting Coleco's Adam computer. My question is, is Coleco going to make a disk drive system for Adam? What other software is Coleco planning to make for it? Thank you very much.** *Alex Bandak*
Cerritos, CA

A Yes, a 5¼" disk drive will be available in 1984 and all Adam games will be put on disk. In addition, many games from third-party software manufacturers such as Synapse and Epyx will be available for Adam this year on diskette.

Q **I am the owner of a TI 99/4A. I recently heard that Texas Instruments is going out of business. Is this true or are they just discontinuing the production of the 99/4A?** *Chris Gunsel*
Huntington, NY

A It is true that TI is out of both the hardware and software business, but they will continue to honor all warranties. Third-party software companies will continue to produce new programs for the 99/4A and TI will advise all owners of any new software. You must, however, inform them of your current address by writing to Consumer Relations, P.O. Box 53, Lubbock, TX 79408. They also have a toll-free number, 1-(800) TI-CARES, to answer service questions.

Q **I heard recently that Commodore has made or is making a new computer. Is this true?** *Christopher Brown*
Welcome, MN

A Actually, Commodore recently announced that they were planning to come out with two new computers: the 264 and 364 both with 64K. Both were to be incompatible with the C-64 and to be on the market by spring 1984. However, Commodore changed their minds and the 264 and 364 are now on hold indefinitely. They do have the SX 64, a portable computer with a built-in 5" monitor, which is completely compatible with the C-64. If you'd like more information, write directly to Commodore at 1200 Wilson Drive, West Chester, PA 19380. See our Random Access column on page 80 for more about the CES Show at which the new Commodores were announced.

Q **Why is the Commodore disk drive more expensive than the computer itself?** *Nadim, Rubeiz*
Beirut, Lebanon

A The way we hear it is that the computer is made up entirely of electronic chips while the disk drive has electronic chips *and* also a number of mechanical parts which must fit very precise specifications. It is the precision with which these mechanical parts must be manufactured that adds the expense.

Q **I own an Atari 800 home computer and, as you know, there is a left cartridge slot and a right cartridge slot. I would like to know what cartridges go into the right slot.** *Sean Sands*
Baton Rouge, LA

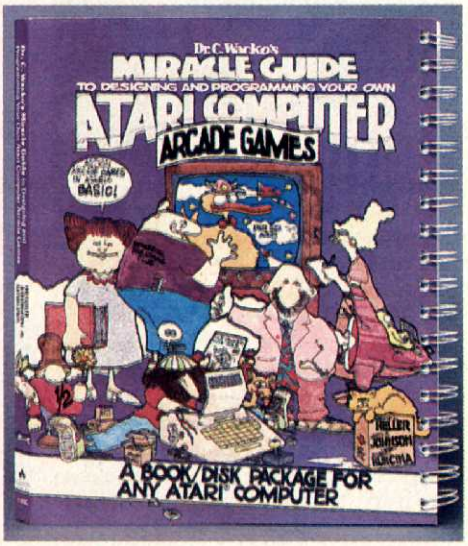
A Almost all cartridges for your Atari will use the left cartridge slot. The right cartridge slot was intended for programs which wouldn't fit on just one cartridge. The only ones this long we can think of are programs which allow you to make back-up copies. The more recent Atari computers have only the left cartridge slot.

Do you have any questions at all about computers? Do you have a problem that needs solving? We have a staff of experts just waiting to answer you. Send your questions to: Input, ComputerFun, 350 East 81st St., New York, NY 10028.

TEXAS INSTRUMENTS COMPUTER 99/4A
PARSEC

Dr. C. Wacko's Miracle Guide

Addison Wesley/by David Heller et al./$24.95


Dr. C. Wacko's
MIRACLE GUIDE
TO DESIGNING AND PROGRAMMING YOUR OWN
ATARI COMPUTER
ARCADE GAMES
A BOOK/DISK PACKAGE FOR ANY ATARI COMPUTER

Any book that starts off with a program that prints words upside down is all right by me. And *Dr. C. Wacko's Miracle Guide to Designing and Programming Your Own Atari Computer Arcade Games* is just such a book. Right there on page 15—even before Dr. Wacko gets into all that other groovy stuff—is a short, seven-line program which prints a self-congratulatory statement upside down using lots of PEEKs and POKEs. With alternating presses of the START and SELECT buttons (you'll establish your own rhythm) you can flip it right side up and upside down, right side up and upside down until you tire of that exercise. But I must say that typing this program in at the outset puts you in a very enthusiastic state of mind for the rest of this very witty and elucidating book.

Changing the game

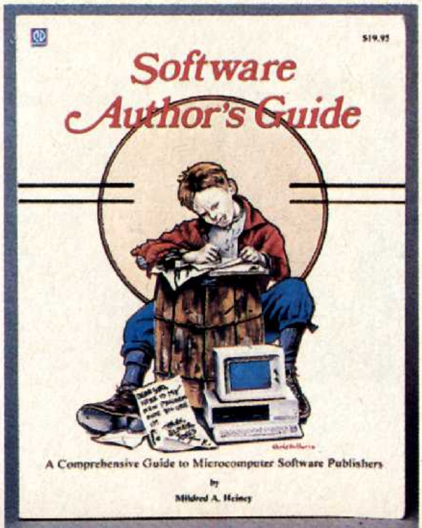
In addition to a colorful 235-page text, *Dr. C. Wacko's Miracle Guide* also comes packed with a double-sided, single density 5¼ inch diskette on which is a wide selection of arcade type games with some of which gamers everywhere are already intimately familiar. But the games are not there simply to play. No sirree. These games are fixed so that you can modify them. How many times have you played even your favorite game and thought, "If only the designer had included an overdrive on those ostriches in *Joust*. That would have been all the better." Well, perhaps *Joust* is a bad example as it is not one of the games included on the diskette. But *Tron* is there. And if there were anything you were dissatisfied with in *Tron*, it can be added or taken away.

Modifying Dr. Wacko's games is only a way of honing your game invention skills and the Doctor encourages you to go right ahead and create your own. He teaches you some very useful subroutines for scoring and using graphics with a text window so that you can take your first steps on the way to your software fortune.

The book is easy to read, provides lots of great hands-on programs and inside tips on game design. In addition, it is rife with clever line drawings and a cast of cartoon characters with important things to say such as "Yah, but will it cook anchovy burritos?" —*Randi Hacker*

Software Author's Guide

Datamost/by Mildred A. Heiney/$19.95



Designing a piece of software is only half the battle for a programmer. The other half is getting it published. The *Software Author's Guide* provides a yellow-pages-like directory of software companies that accept submissions.

The book succeeds both as a directory of companies and in its brief explanation of the importance of legal protection and documentation. Companies are listed in alphabetical order and cross-indexed at the end of the book by computer system, software type and region. These indexes can be invaluable to the hungry programmer.

Vital Statistics

The main entries try to cover the points of major interest to a software author. For example, an entry describing the California company Broderbund includes the mailing address and phone number of the company, and the person in charge of product development. Following this vital information are several paragraphs outlining the company's product preferences and memory requirements. Also described is the bestselling program and the number of programs in their current line. Perhaps the most important information, though is in the "Tips from Broderbund." These are general hints to make your program more saleable. Unfortunately, not all the companies are covered in the same depth. For example, on the same page that the Broderbund listing ends there is a listing for Budge Co. that only includes an address, phone number and the sentence, "Winner of the SOFTALK Award for most popular program in 1981." No mention is made of which program won the prize nor if the company accepts software submissions. This is a major flaw of the book.

The differences between company listings are not an indication of the author's opinion of any company but rather of the author's inadequate research. All the listings are based on a questionnaire that the author

Continued on page 79

HITS AND MISSILES

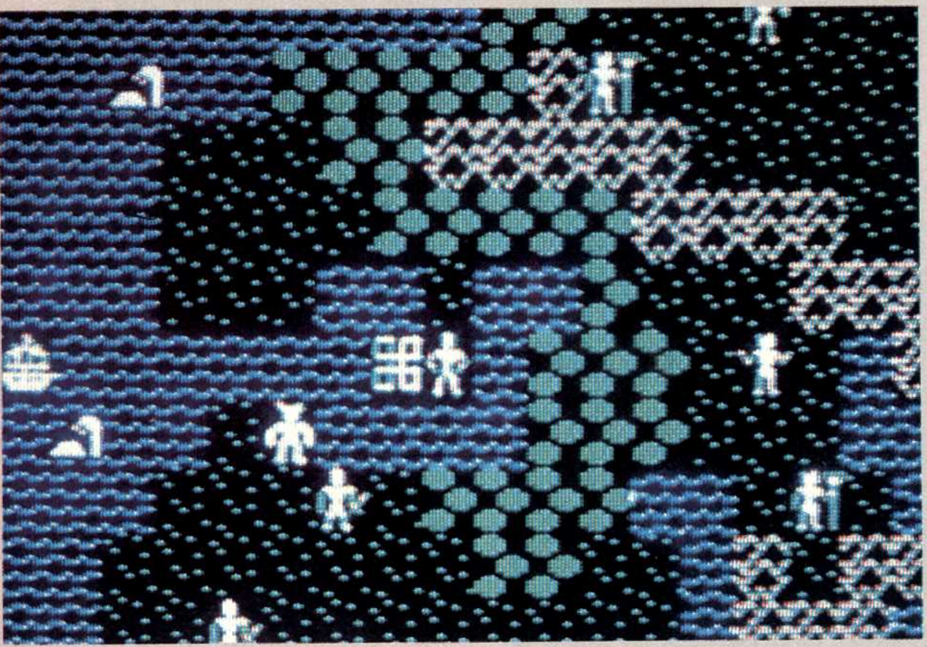
Ultima II ■■■■

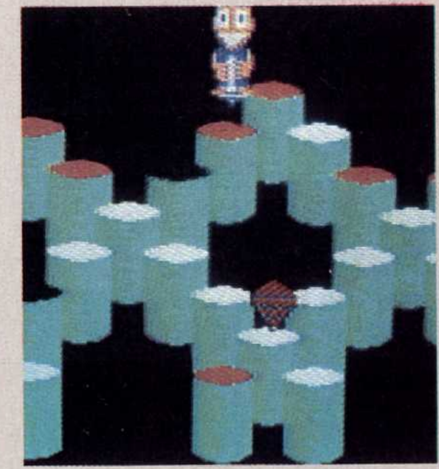
Sierra On-Line/Ap, At, IBM PC

How they did it I'll never know, but "Lord British" has overcome the dangers inherent in sequels and has produced a followup game that is nothing short of phenomenal.

This time the quest is to find and conquer Minax—evil female protegee of *Ultima I*'s archvillain Mondain. She has re-established her mentor's reign of terror. Instead of searching through four different continents on the same imaginary world, however, your adventures here take you to a recognizable Earth in five different times. Although a practical (and beautiful) cloth map included with the game gives you an outline of the network of time doors that allows you to travel between these various Earths, navigation is much more of a problem here than it was in *Utlima I*. The time doors appear and disappear on differing schedules, so you've got to get the hang of their rhythms to exploit them efficiently.

The general run of play is much the same as the earlier game—but the mechanics and features you encounter are almost all changed; most of the time, they're more difficult, challenging and interesting. For one thing, there are fewer cities, towns and castles, making it more difficult to buy weapons, armor, transportation, magic and hit points. On the other hand, all of them are laid out differently, making exploring each new one a real challenge. The unique "Transact" command that allows you to talk to other game characters has been expanded to include almost everyone you meet, including some monsters. That doesn't mean it's easier to get information; some of the tirades you'll hear are full of misdirection, and some are just jokes. The list of other improvements goes on and on: a much-needed "magic map" command, a bribe routine that can sometimes be pretty useful, a revamped (and longer) list of spells, etc. My only cavil is that the space travel feature in *Ultima II* doesn't appear to be as crucial to winning the game as it was in *Ultima I* (since I haven't won it yet, I can't say for certain). But that aside, *Ultima II* is a far richer, more fascinating and challenging experience than its predecessor. It is every inch the role-playing masterpiece it's being billed as. —*William Michael Brown*





Pogo Joe ■■■■

Screenplay/C-64

It's most definitely the element of whimsy that sets this *Q*Bert* clone apart and makes it one of the most original, imaginative and fun games ever. For example, each of the screens (and there are upwards of 60 of them) has a funny, if unrelated, title such as "If U Cn Rd Ths, U R Wrd" or "Heart Like A Head." For another example, Pogo Joe brings his own form of alternative vehicular transport (i.e. a pogo stick) and never once uses his own feet to jump from cylinder to cylinder in order to go about his job of changing colors.

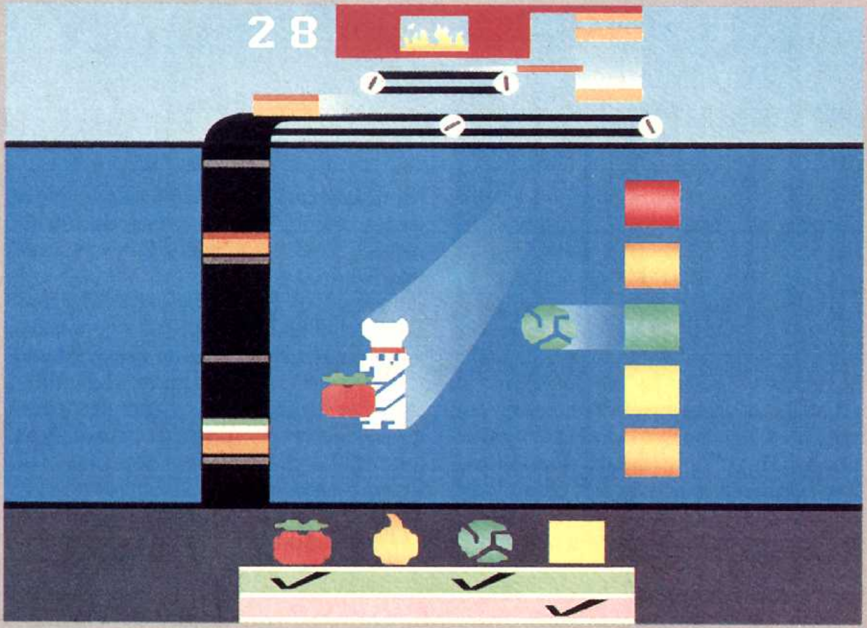
But best of all is the wind tunnel trick. See, if you're being pursued by one or another of your adversaries, you can jump into this wind tunnel which will shoot you out at another location on the screen. If there's more than one wind tunnel, where you end up is random. While wind tunnels are good strategy devices, they're tricky. Getting out of one of them and placing Joe where you want him, requires split second timing. Miss, and you'll find yourself popping up here and there until your hair is so tangled there'll be no dragging a comb through it.

Pogo Joe is like *Q*Bert*. Your objective is to change the colors of the cylinders by jumping on them. You can only jump diagonally but, by pressing the fire button, you can do a super jump and clear two cylinders at once. Your adversaries begin as eggs.

As is the case with most eggs (exception: hard boiled ones) these eggs are vulnerable. In other words, before they hatch, they can be destroyed simply by bouncing on them. They hatch, by the way, into an assortment of creatures. Some are not the types you want to get close to—purple creatures, for instance. Others, such as pink elephants, don't harm you and are easily destroyed. Tops spin around and undo your work.

Each screen is a planned geometric pattern. It may look random, but there's method to this madness. Thus, with a little study, you can figure out how to go about your task most efficiently without endangering yourself. If you do it really well, you can even save all the flashing green cylinders (which disintegrate your enemies) until the end. —*Randi Hacker*

Pressure Cooker ■■
Activision/VCS



As you might have already guessed, *Pressure Cooker* casts you as a cook. The object here is to simply fill burger orders and the way you go about it is no more organized or interesting than the way it is done at Burger King. The pressure part comes into play the moment you tap the reset switch.

First you must read the electronic order board that runs along the bottom of the screen. Up to three burger orders will appear at any one time. The board contains four columns; one for onions, another for tomatoes, and the remaining two for cheese and lettuce. Say, for example, line one has a check mark in the tomato column. To fill this order you must catch a tomato as it flies out of the condiment machine and carry it over to the conveyor belt. After dropping it on one of the burgers you must then move to the bottom of the screen and catch a bun. Now carry the bun over to your tomato-garnished burger and lift your creation off the belt. With burger in hand, you leave the assembly room and enter the wrapping room. Here you'll find three wrapping machines—one blue, one red and one green. The idea here is to drop the finished burger into the appropriate machine. To find out which burger goes where, you must again consult the order board. One of the lines will be flashing. Its color corresponds to that of the proper machine.

This procedure might sound highly organized but actually it isn't. While you're busy reading orders, the condiment machine is even busier spitting out condiments in a most haphazard manner. If, for example, one burger requires onions you must reject whatever other condiments that the machine tosses out at you. If they sail clear across the assembly room unchecked, or worse yet, hit your chef, you lose some of your performance points.

To its credit, *Pressure Cooker* is a good test of one's memory. Success depends on your ability to look, retain and execute in an efficient manner. On the minus side though, the game is much too repetitive to qualify as fun. Furthermore, I have to give this game poor marks for originality. In both a visual and conceptual sense, *Pressure Cooker* emulates a number of past VCS cartridges such as CommaVid's forgettable *Cakewalk*. One could liken *Pressure Cooker* in a loose sense to *BurgerTime*, but it lacks charm and lunacy—two qualities responsible for that game's popularity. —*Michael Blanchet*

Planetfall ■■■■
Infocom/At, Ap, C64, IBM

From the second you open the package to this rollicking outer space adventure you know you are in for a good time, and the fun never lets up. Of all the Infocom text adventures we've played so far, *Planetfall* is the ideal combination of brain-testing and satisfaction. Here's what you get in addition to your program disk: One (1) Stellar Patrol ID Card (destruction of which is "punishable by death"); three (3) picture post cards from outer space ("Wriggle on over to NEBULON! Home fo the WORM PEOPLE"); one (1) diary (complete with doodles) belonging to the lowliest of the low space cadets (you).

Even with all this support material, however, you still have no idea of what you're supposed to *do* in *Planetfall* until you're about a third of the way through the adventure. What you do a lot of is exploring, and *Planetfall* gives you lots of real estate to poke around in. You also get to drive a subway train and sing a ballad to a robot.

The authors have spared no imagination in devising the subtle details sprinkled throughout. There's the Esperanto of outer space, for instance—something called Galalingua. In Galalingua, "Infocom games" is translated "Infokom gaamz". Early on, an ambassador from some unpronounceable planet hands you a brochure describing these futuristic entertainments. If you happen to run across the brochure later in the adventure the computer will say, "Unfortunately, one of those stupid brochures is here."

The authors also pay due homage to one of their inspirations, the classic radio drama and series of books, *The Hitchhiker's Guide to the Galaxy*. It's not long before you find a towel inscribed with the reassuring phrase, "Don't Panic!" Although the *Hitchhiker's Guide* recommends that you "always carry a towel", never jump to conclusions—there are enough red herrings in *Planetfall* to fill a whole other adventure game. In fact, when you get to the end you are even promised a sequel. Don't miss the sequel to this review, by the way, in which I tell you about the time I helped someone sharpen a pencil. —*George Kopp*

Lock 'n' Chase ■■■

Mattel/Ap, IBM

Here's a cops and robbers maze game which is close enough to its arcade parent to satisfy old fans, and original enough to inspire a whole new audience.

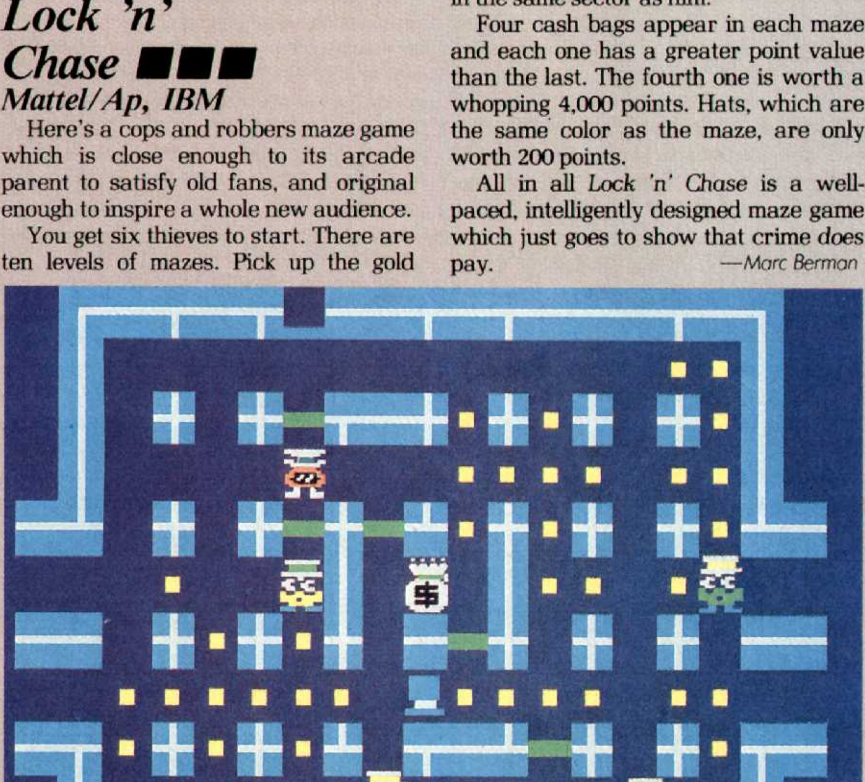
You get six thieves to start. There are ten levels of mazes. Pick up the gold coins in each maze and score extra points by nabbing bonuses: sacks of money, hats, crowns, briefcases, and telephones.

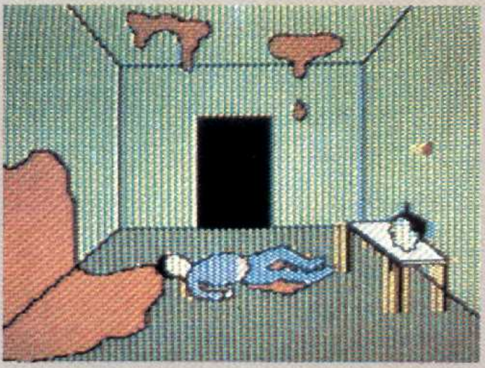
Instead of Stuffy, Smarty, Silly and Scaredy of the coin-op, your opponents here are simply called the police. (And I don't mean Stewart, Andy and Sting.) There are four of these squat enforcers on every screen. You can outrun them and, in a pinch, give them the slip through a side door.

One interesting features (reminiscent of *Pengo* and *Ladybug*) is your ability to build walls behind you, blocking the coppers' way. Using your S key or fire button you can erect a temporary barrier at the last junction you pass. It dissolves after a few seconds. Make sure you only use it when a cop is trailing you—if there's a cop in front of you, you run the risk of locking yourself in the same sector as him.

Four cash bags appear in each maze and each one has a greater point value than the last. The fourth one is worth a whopping 4,000 points. Hats, which are the same color as the maze, are only worth 200 points.

All in all *Lock 'n' Chase* is a well-paced, intelligently designed maze game which just goes to show that crime *does* pay. —*Marc Berman*





Crypt of Medea ■■▌

Sir Tech/Ap

There is a great deal of blood, gore and mayhem in *Crypt of Medea*; blood, gore and mayhem of the sort that hasn't been seen since those EC comics of the fifties.

Hi-res adventure? Hi-grossout-quotient adventure is more like it. Among the goodies you'll encounter as you make your way through a lot of rooms with "no visible exits" are a decapitated head with a steel rod skewered through it, some vicious Jell-o that apparently eats humans instead of the other way around, a decapitated dog and much, much more. Your way is treacherous, of course, and if you do something wrong, you're told so in no uncertain terms. Be careful what you reply. Though most adventure games don't recognize four-letter words, this one actually understands them. Type one in and an avenging angel appears to relieve you of your possessions and demand an apology.

There are several other ways of dying in this game, all of them very grisly. You'll want to try them all. That's the most fun you'll have. Because unfortunately, *Crypt of Medea* doesn't give the player any real task to complete. The only object, aside from staying alive, is to get out of the labyrinthine series of ravines, tunnels, laboratories and mausoleums you find yourself in. Part of the appeal of adventure games is that the player is assigned something to do and has to stay alive while doing it: saving a planet from destruction, finding a treasure, vanquishing an evil wizard; that sort of thing. *Crypt of Medea* offers no such purpose. —*Glenn Kenny*

Congo Bongo ■■■

Sega/VCS, 52

Revenge is sweet (and best of all, no calories) and you're out to get it in *Congo Bongo*, Sega's newest release for the Atari VCS. As the story goes (cf. the arcade game), the giant jungle ape, Congo Bongo, has stolen your tent, your lounge chair, your book and your fire. (Your fire??) In fact, he's taken everything except your girlfriend, for a change. Nevertheless, you have decided that no risk is too great, no obstacle too insurmountable in your quest for the return of your chaise lounge.

However, Congo wants to keep his ill-gotten gains, and so *Congo Bongo* begins. *Congo Bongo* is basically a climbing game; you must ascend cliffs and cross bridges all the while leaping over the coconuts that Congo Bongo is throwing. What makes this game unique is its perspective; it has the same diagonally-overhead, pseudo-3-D slant that was used in *Zaxxon*. What this succeeds in doing is making a fairly dull, ordinary game into a refreshingly new challenge.

Sega has managed to capture the perspective perfectly in the first screen, making it a pleasure to maneuver your pith-helmeted adventurer around the narrow pathways. Besides the coconuts and the possibility of falling off of a platform, there is also the danger of being thrown over a cliff by the roaming monkeys. In any case, whenever you die, you become a tiny, haloed angel and float off the screen.

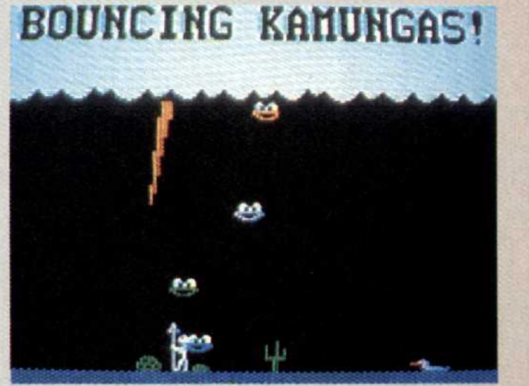
When compared with the arcade game, the music and graphics may seem a little limp, but considering the limitations of the VCS, they are magnificent. It is truly a significant accomplishment that the programmers at Sega were able to squeeze so much action into a single cartridge. It is Sega's best game to date. —*Charles Ardai*

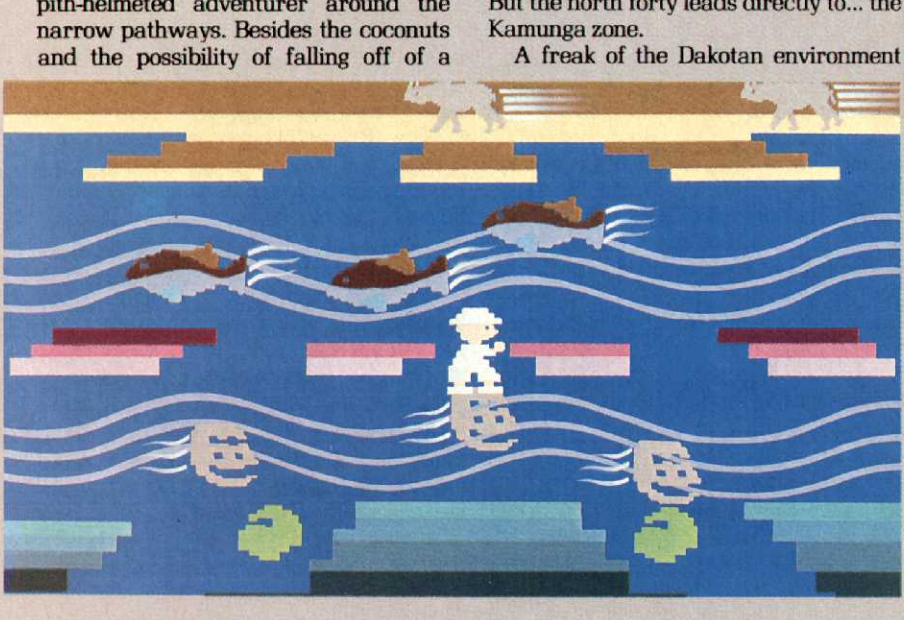
Bouncing Kamungas ■■

Penguin/Ap

What reads like the introduction to a segment of the "Twilight Zone," sad to say, plays like so many other games that have come and gone before it. Picture, if you can, a tranquil South Dakota melon patch. You, a farmer, are intent on planting and harvesting your crop. After the harvest you hope to bring your melons to market. A relatively simple task and one that's probably completed many times by many farmers every day. But the north forty leads directly to... the Kamunga zone.

A freak of the Dakotan environment has produced the Kamunga—a silly looking furball with an even sillier grin. Just as we are born to pay taxes and die, the Kamunga's sole purpose in life is to smash melons, which he does rather deftly by falling on them.





Compound this problem with another, namely the "nearsighted weather snake." These creatures are harmless, but scare one and all your melons will be spoiled. Furthermore, the "pheremones" released by a frightened weather snake cause the cloud cover over your patch to descend a little lower.

What do you do, short of opening a theme park on your acreage? There's only one way to deal with a Kamunga—skewer him with a pitchfork. Based on the gameplay we could call this one "Grant Wood Meets *Kaboom*."

While you're busy fending off Kamungas you must also be wary of lightning. As the instruction booklet states: "Your pitchfork is metal, and metal attracts lightning." This is the educational part.

If you manage to see nine melons to maturity, the next step is to load them into your pickup truck and take them to market. En route you will encounter "Peronies"—creatures that "imitate holes." They knock melons from your truck and eat them.

For awhile *Bouncing Kamungas* is fun and funny stuff. Unfortunately, the fun part soon disappears, followed closely by whatever one might find humorous in this preposterous scenario.

What saves the game are its exceptional graphics. Everything comes off in a comical, slapstick fashion. One sequence that's always good for a laugh is when a Kamunga hits the not too careful farmer in the head. Sick, maybe, but very funny. —*Michael Blanchet*

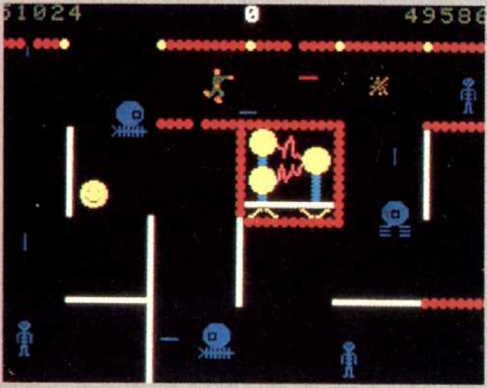
Frenzy ■■■■

Coleco/CV

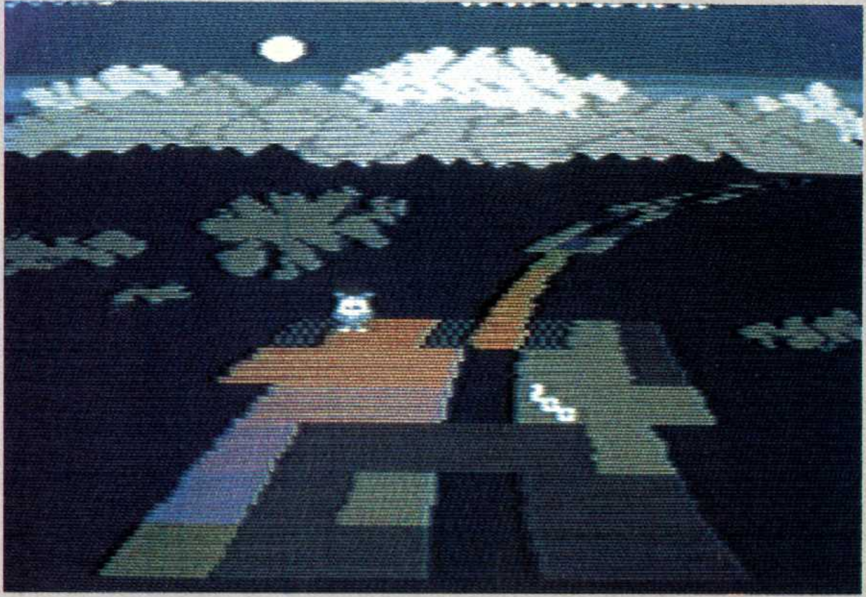
After *Venture* came out for the ColecoVision, there was a drought of good shoot-'em-up games for the system. Fortunately, Coleco has just come out with *Frenzy*, a game that has what every good shoot-'em-up fan is looking for—lots of action, a bit of strategy, and lots of surprises.

This is a deluxe version of its predecessor, *Berzerk*. The scenario is the same: you're trapped in a never-ending set of mazes with robots trying to kill you. There's also the familiar bouncing ball (Evil Otto) with the sadistic smile who comes in for the coup de grace.

Unlike *Berzerk*, however, in *Frenzy* you can destroy Evil Otto! That's right. Three shots at old moonhead and he deflates like a balloon. As soon as he does, though, another, faster Evil Otto comes at you. Another difference worth mentioning is that most of the walls either deflect bullets or are destroyed by them. This adds a neat twist to an already great game. *Frenzy* also gives you a picture every few screens, which, if you shoot it, will affect the robots, or you. These screens add an element of surprise that has some very interesting results, some helpful, and some deadly. It's quite a change from the assembly-line-like *Berzerk*.



The graphics are just like the arcade. And while this home version has no voices, the sound is very good. And the action is unbelievable. With bullets flying everywhere, it's enough to put you in—what else?—a frenzy. —*Noel Steere*



Rainbow Walker ■■■■

Synapse/At

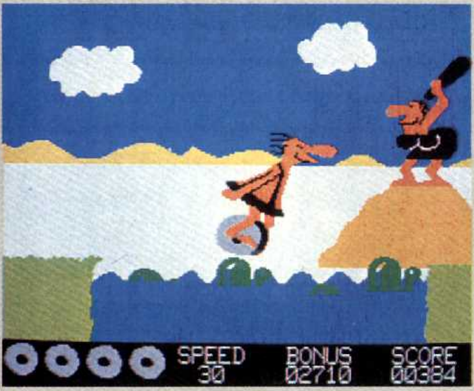
Once upon a time, there was a kingdom. This kingdom was a very special place, since all the people in it were joyful and always in good spirits. The reason for this was a magical rainbow, resplendent in all the colors of the spectrum, that appeared mysteriously in the sky one morning. This rainbow spanned the horizon and blanketed the kingdom with its magic.

But there were evil beings hiding in the mountains who hated the rainbow and all the gaiety it brought. So they banded together and cast a spell that turned the rainbow grey and dreary, and that poked holes all over its surface. "No longer did people go merrily gallumping about. No longer did the minstrels sing the happy songs of the realm. And worst of all, not a single smile could be found on the faces of the children."

You are Cedric, the king's bravest and most loyal subject. Your duty is to get the people gallumping again. The only way to do this is to walk across the rainbow with special magic shoes, thereby returning the rainbow to its original splendor. Wearing the shoes, you have the ability to walk anywhere on the rainbow, but tread on a hole, and you fall through to the ground. In addition, the evil creatures and their cohorts are on the rainbow, too, and will do anything in their power to confound your mission. There are devils and snakes and crabs, and many other monsters, whose touch is fatal. Some have special powers as well, such as the bird who carries you away into the clouds. If any one of these creatures touches a colored square of the rainbow, it turns grey again. Along the rainbow are several "freeze squares;" when you jump on these, all of your enemies stop moving, and you temporarily gain the power to push them off the rainbow.

Once the entire rainbow has been colored, you play a bonus round. In this round you must try to stay on a tiny path through the clouds for as long as you can. Once you fall off, you must recolor another, more complex rainbow.

Rainbow Walker is a delight. The graphics, the colors and the music are all beautiful and the gameplay stupendous. The story ties into the game very well, unlike most video games, and it will endear itself to many people, children and adults alike. There are many secret tricks and a lot of surprises making each game unique. *Rainbow Walker* is magnificent. Play it and live happily ever after. —*Charles Ardai*



BC's Quest for Tires ■■■■

Sierra On-Line/CV, At

In the beginning there was fire. So man invented fire departments. But he soon discovered, lo, the fire trucks would not move. So he invented the wheel. And the world was his interstate. Before long he realized that, hey, this wheelamabob could come in handy for things besides municipal mastodon extinguishing—he could use it after hours for dating. Then he discovered Stone Age woman and drive-ins and package stores and driving down to the tarpits to watch the subspecies races. Which is what *BC's Quest* is all about: romance.

The object is to rescue the Cute Chick, who is being held captive by a grinning dinosaur. To do this, lovesick Thor must get past boulders, potholes, low-hanging branches and logs, cross a river and avoid the murderous Fat Broad, climb a mountain and cross its lavadome, jump a cliff and dodge volcanic hail, cross another river and enter the cave of the dinosaur. If that ain't love, I'll be a monkey's ancestor.

There are actually nine sequences which scroll into each other. You control your nimble Neanderthal's left/right position on the screen, his speed and his jumping and ducking. For instance, in the lava pit screen, you must reach the edge of the pit exactly when the Dooky Bird is overhead so it can carry you across. To get the timing right you must adjust your position and your speed, while jumping over obstacles. The next screen, however, is a downhill race that would challenge Jean-Claude Killy and you must build up to a speed of at least sixty miles an hour to jump the chasm at the bottom of the slope.

The point is, that each screen calls for different skills and tactics. Despite its prehistoric setting, this is not a primitive game. It has charm and a story line similar to *Smurf*, but gameplay is much more sophisticated. Not only are there four difficulty levels for one or two players, but you can adjust your speed during the game—nay, you must or you will be clobbered by boulders. It's survival of the fittest.

It should come as no surprise that the graphics look just like *BC* comics. But they really take advantage of the CV's high-res capability, from Thor's paleozoic pageboy to Fat Broad's taunts. (A bubble over her head says, "Jump, sucker!") Stumble over a rock and Thor stares at you with a what-did-I-do-to-deserve-this expression before falling on his face. *—Marc Berman*

Pooyan ■■■

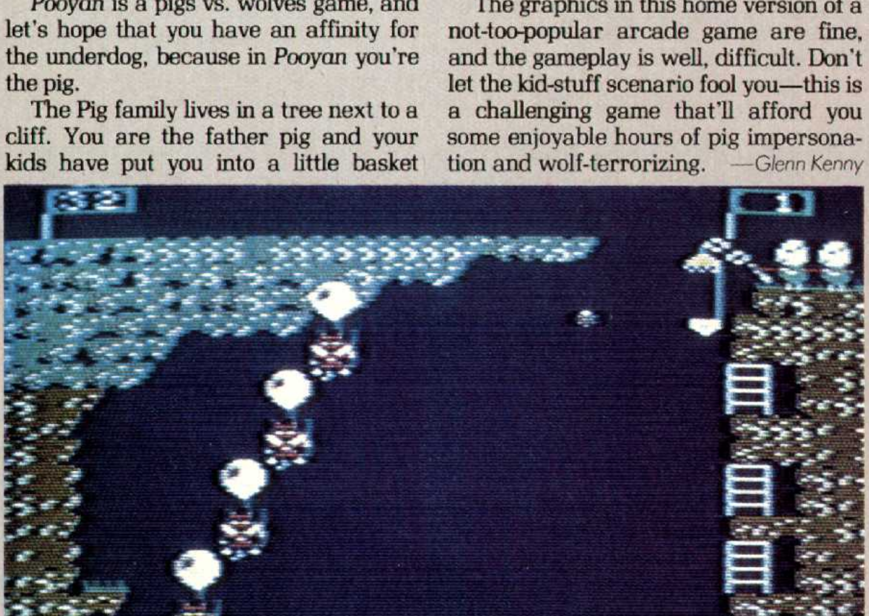
Datasoft/At

Pooyan is a pigs vs. wolves game, and let's hope that you have an affinity for the underdog, because in *Pooyan* you're the pig.

The Pig family lives in a tree next to a cliff. You are the father pig and your kids have put you into a little basket which can be lowered and raised from treetop down to its very roots. You've got a bow and arrow, which is a useful if somewhat outmoded way of fighting wolves. You don't shoot the wolves, however; you shoot the balloons they use to float down from the top of the cliff. The wolves use their free hand to throw acorns at you and upset your basket. If a wolf makes it to the ground unharmed, he climbs the tree and tries to push you out of your basket from behind. Fall from your basket and you lose a life. This is just the first screen.

It sounds almost too cute to be worth playing, right? Wrong. Despite (or maybe because of) its surface cuteness, this is a diabolical game. Between dodging those acorns, aiming those arrows, getting and throwing the meat that can lure a whole pack of wolves away from their balloons and watching your rear in the event that wolves get into your tree, *Pooyan* requires the mental alertness of a Green Beret and the reflexes of a race car driver.

The graphics in this home version of a not-too-popular arcade game are fine, and the gameplay is well, difficult. Don't let the kid-stuff scenario fool you—this is a challenging game that'll afford you some enjoyable hours of pig impersonation and wolf-terrorizing. *—Glenn Kenny*



Encounter ■■■

Synapse/At

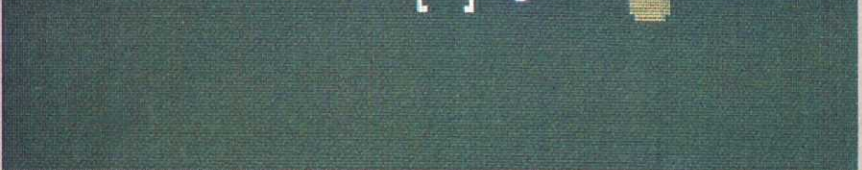
Battlezone was a good game. A very good game. In fact, it was one of the best first-person simulations ever made. Since its release, countless imitations have been made for video game systems and computers alike. Recently, Atari came out with the official versions of *Battlezone*, and poor though they were, I was hoping that they would put the slew of imitators to rest. Alas, this is not the case, as evinced by Synapse's new release, *Encounter*.

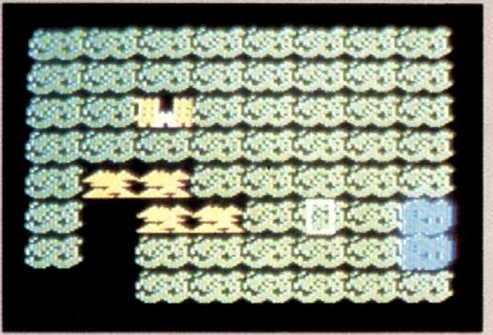
That is not to say that *Encounter* is bad. On the contrary, it is rather good, as *Battlezone* clones go. But there is that; *Encounter* is basically *Battlezone* with a twist. What's the twist? Well, instead of randomly placed cubes and cones, *Encounter* has 64 regularly placed pylons that are not only tank-impenetrable, but also are impervious to missiles.

For those of you who have never (gasp!) played *Battlezone* or one of its variations, the story is simple—you are looking out on a field from inside a tank. On this field with you are a bunch of tanks and other nasties that are gunning for you. Obviously, if you intend to survive, you will have to fire back at your enemies. The tanks, etc., by the way, are robot controlled, so you need have no qualms about killing them.

The attack/defense stage of *Encounter* is nicely done and the graphics are superb, but by far the best part of the game is simply steering between the columns. When you speed up and try to do a slalom, the feeling of movement is realistic and exhilarating. The only problem is that you don't get points for playing with the pylons; if you want to score, you must go after the enemies. This becomes rather boring after a very short while. The pylons come into play in the sense that shots can rebound off of them, but regretfully they aren't in use often enough.

Still and all, *Encounter* is a good combat game. It is difficult and challenging, but the spark of originality (the pylons) is not used very well. If that seems frustrating, it is, but not to an unbearable extent. And, if you aren't out for points, you can just lazily swerve in and out of the columns, enjoying the sensation until you get shot. It really is fun, and who cares if games played in this way are often painfully short? There's always 'reset'... —*Charles Ardai*





Fortress of the Witch King ■■■

Avalon Hill/Ap

In *Fortress of the Witch King*, as in so many *D&D*-type games, you're on a mission to restore order and tranquility to a troubled land. In this case, the troublemaker is the Witch King and you've got to gain entrance to his fortress. This guy has many evil followers but, oddly enough, not a single witch. In fact, I was hard pressed to find a hint of a witch anywhere in the game.

Fortress can be played by as many as four players but it's most fun when played alone. Although the multi-player option adds a new dimension of competition to the game, the pace is greatly slowed down and, if you want to play fairly, only the player whose turn it is should look at the screen. This means that all the players will find that they're spending more time away from the keyboard than near it.

At the beginning of each turn, you are given a choice of things to do. You can move, cast a spell, look at a map and so forth. You choose the option by typing in the corresponding number. The computer responds in a given way. If, for example, you choose to move, you're shown a closeup of a map (a new one is generated every time) which gives you your current position and directional instructions for movement. How far you can travel on any turn depends on many factors—how hungry you are, whether or not you move in a straight line or whether or not you're attacked, to name just three.

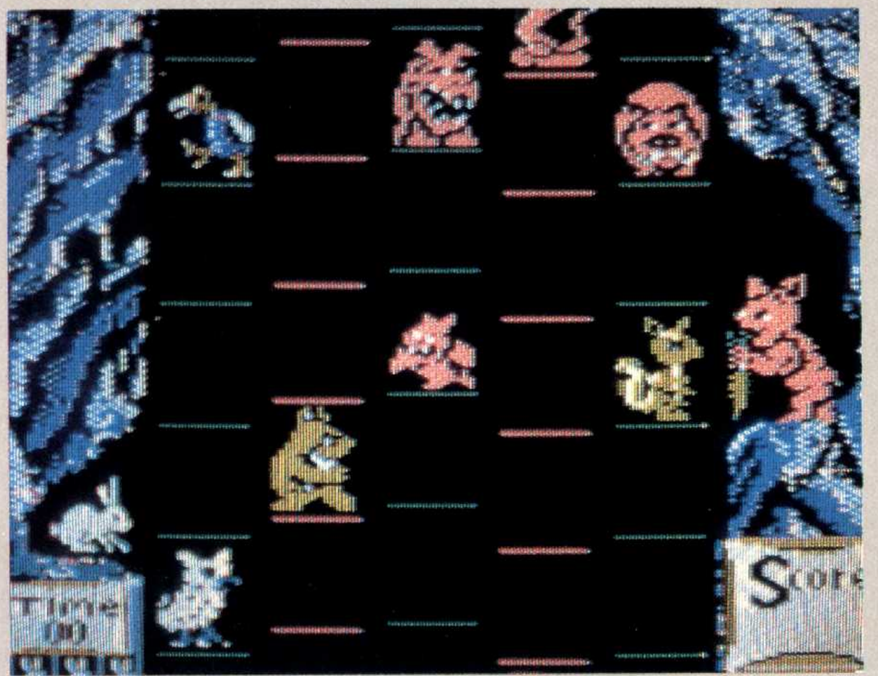
Although *Fortress* is, in some respects, similar to *Wizardry*, it is by no means its peer. If nothing else, this game could serve as a primer for those who find *Wizardy* a bit too complex to jump right into with no training classes first. Those of you who are tired of standard graphics adventures will find *Fortress* a welcome and refreshing change. This is not a puzzle. Instead, its challenge lies in weighing odds and planning.

Super Bunny ■▮

Datamost/Ap

The idea behind *Super Bunny*, in which a mild-mannered bunny named Reginald is given powers far beyond those of mortal rabbits after eating some super-charged carrots, is to get Reginald from the left side of the screen to the right, where his carrots are. In order to do so, he must hop on and off a series of six elevators, which are peopled by various critters who'd love to make rabbit stew out of him. Once Reggie gets to the other side, he eats the carrots and is transformed into a Jack LaLanne graduate. He is now able to punch out those critters and score points. As the levels get higher, more enemies appear, the elevators go faster, and the amount of time Reggie has as Super Bunny decreases.

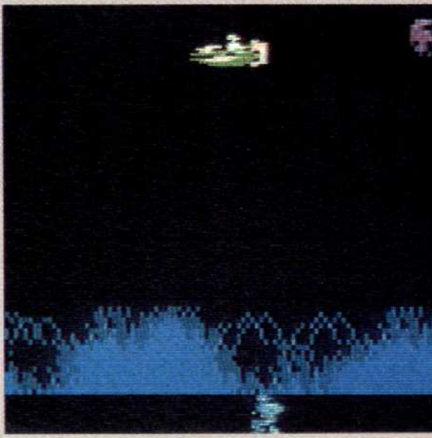
It's not the easiest game to play; if you don't hop onto the elevators at just the right time, your rabbit ears hit the elevator ceiling and you die. But despite its difficulty, the game doesn't really pose much of a challenge. The graphics, are good but they don't come out and grab you. *—Glenn Kenny*



The Power of HeMan ■■

M Network/VCS, I, CV

He-Man, that great hunk of macho do-gooding who's been appearing with alarming regularity on TV cartoons, lunch boxes and action figures, has found his way into your VCS. This is not cause for rejoicing. For those not familiar with the character—and in this case, ignorance *is* bliss—He-Man's a good-hearted but not overly brainy dude whose mission in life is to guard the magic Castle Greyskull from the evil designs of Skeletor, who wants its powers for himself.



The object of *The Power of He-Man* is to get He-Man's Wind Raider to the Castle, where He-Man then battles Skeletor. The first screen is like a beginner's version of *Defender*; as the Wind Raider travels the thirty miles to the Castle it must zap the energy bolts (which make an annoying sound as they ascend) fired by Skeletor's warriors and send those baddies to the craters created every time the Wind Raider drops a bomb. The Raider can only drop a bomb after shooting an energy bolt, so timing and coordination are crucial here. Keep center and move at moderate speed. This section is fun for a while, but gets dull way before your thirty miles have been travelled. Was this trip really necessary?

Things don't get much better after that. Once you've landed at scenic Castle Greyskull, the game cuts to a battle between He-Man and Skeletor. Well, not really. It's more a battle between He-Man and the moving walls that block his path. If He-Man touches the walls or gets in the way of one of Skeletor's energy bolts, it's bye-bye. If he makes it past these obstacles, Skeletor is anti-climactically dealt a blow by He-Man and it's back to the Wind Raider again, this time at a higher difficulty level.

This game, which isn't very good to begin with, is also repetitive. *—Glenn Kenny*

Panzer-Jagd ■■■

Avalon Hill/At

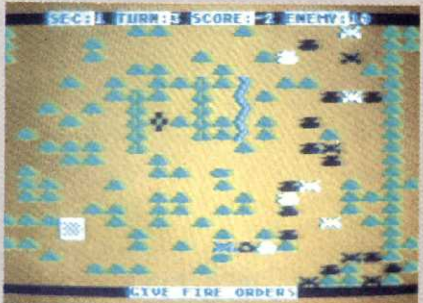
If you buy the disk version of *Panzer-Jagd*, you get two war games in one. In both versions, you get to be all of Germany's armed forces while the computer gets to be Russia's. Despite the fact that you are never allowed to switch nationalities, *Panzer-Jagd* is an excellent war simulation game.

The object of both *Panzer-Jagd* and *Panzerun* is to seek out and destroy the enemy in a heavily wooded area which both you and your computer opponent can use for camouflage. In neither game do you know where your opponent's units are until he fires or moves out from under the trees into open terrain. And if hunting an invisible enemy isn't hard enough, you are also hampered by time and fuel limits.

The first game, *Pazer-Jagd*, is the freebie you get if you buy the disk version. It is a great deal more simplistic than *Panzerun*. *Panzer-Jagd* has three different types of terrain: woods that can be used for camouflage but which cost you more fuel to traverse, open terrain, where you can be readily seen by the enemy but the fuel costs are lower and, finally, streams that stop you as soon as you move into them but allow you to move normally afterwards.

The computer has two different types of units; tanks which have great mobility and strength and firing range and 45mm cannons which are a great deal weaker, slower and have a reduced range. You have heavy tanks, which are a perfect match for the computer's tanks, and light tanks which are similar to the 45mm cannons except that they have greater mobility. The computer has eleven units concealed about the screen while you have the choice of using as many of the eleven heavy tanks and eight light tanks as you wish.

The other game, *Panzerun*, has the same plot as *Panzer-Jagd* except that your game doesn't end when you clear the area of enemy units. You go on to the next sector to wreak destruction and other kinds of mischief. *Panzerun* is also a great deal more sophisticated because it adds a new unit type, infantry and two new terrain types: towns and heavy woods. Heavy woods differ from normal woods in that only infantry units can occupy them, and towns are special because, if you occupy one, the enemy will retreat out of the sector. Probably the most important addition, however, is a new mode of offense—artillery—which represents off-screen guns that support you or the computer. You have to guess one turn in advance where the enemy is going to be before using the artillery. The game can take up to four hours to play, every minute of which can be very exciting. —*Paul Backer*



Zeppelin ■■■■

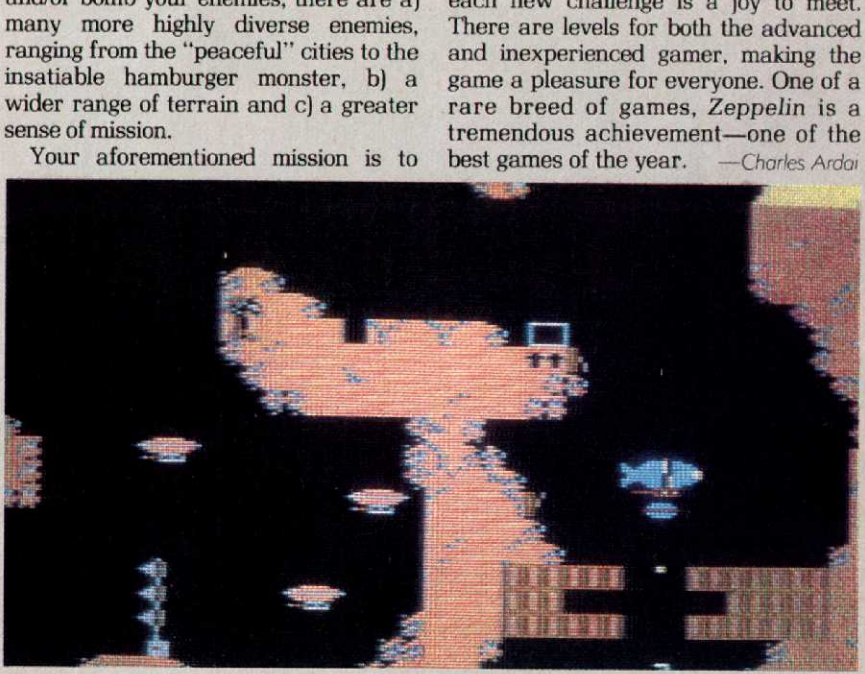
Synapse/At

At first glance, *Zeppelin* may seem to be a lot like *Scramble* or *Super Cobra*, but as soon as one starts playing, the differences become obvious. While you *do* have to go through caverns and shoot and/or bomb your enemies, there are a) many more highly diverse enemies, ranging from the "peaceful" cities to the insatiable hamburger monster, b) a wider range of terrain and c) a greater sense of mission.

Your aforementioned mission is to destroy the entire enemy complex by placing dynamite in a key location and detonating it. Before you can do that, however, you must first find the dynamite and the plunger which are hidden in the maze of caverns. The caverns are filled with hazards and enemy creatures galore, the touch of any of which is fatal. Some barriers and nemesises (nemesi?) can be shot by your guns, but most must simply by avoided.

This isn't all that simple, since you are, after all, a bulky blimp, and are often carrying things below you. Certain items can be picked up simply by placing your zeppelin directly on them, while others, like the switches, must be shot to be used.

Its sheer diversity, if nothing else, makes *Zeppelin* a wonderful game. Something different is always just around the corner (often literally) and each new challenge is a joy to meet. There are levels for both the advanced and inexperienced gamer, making the game a pleasure for everyone. One of a rare breed of games, *Zeppelin* is a tremendous achievement—one of the best games of the year. —*Charles Ardai*



Survivor ■■

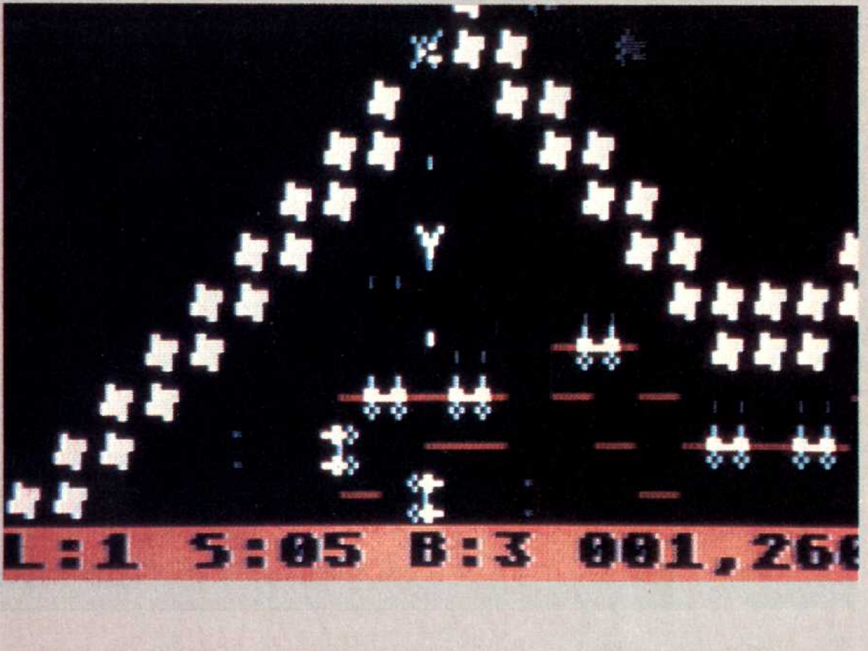
Synapse/At

A long time ago, some wizened video game programmer decided that no science fiction video game would be complete or present sufficient challenge unless during the course of it you were required to vanquish a seemingly invincible foe. Be that as it may, some of the most successful and enjoyable video games, like *The Dreadnought Factor* and *Death Star Battle*, have been based on this premise. Unfortunately, so have some of the worst. *Survivor* can, without hesitation, be classified under the latter heading.

Survivor is your rather pathetic, below-average outer space shoot-'em-up, covered loosely by a skimpy plot, which in no way figures into the game. You, and up to three other players, control the last space ship from the recently destroyed rebel star fleet. Your comrades have been exterminated by the evil Xenogryphs and it is up to you to avenge their deaths. You do this by attempting to destroy the four gigantic Xenogryph space fortresses that are hanging in space just waiting for you to penetrate their force shield before converting your sleek cruiser into space dust. How trying to destroy a fortress, literally hundreds of times your size, with a relatively puny laser will aid your cause is never explained too clearly. All you know is that you must do your best to render it inoperable before it does the same to you.

And die you will, smashing your ships in droves. If the alien trackers don't get you, the fighters will. Or you could run into one of the countless numbers of force shields. Or you'll get caught between a shooting laser tower and a fortress wall. And even if you can withstand that, the awful joystick control is likely to send you caroming into a passing asteroid. And the worst part of it is that even if you do succeed in destroying a single station, there are three more to go.

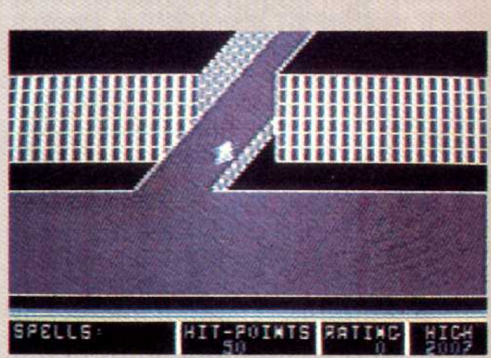
The graphics are terrible; the various squiggles resemble the items that they are supposed to be. While the scrolling is smooth, the terrain is dull and repetitive. The music is rather good, but you only hear it at the beginning and end of each game, making it a heck of a lot more fun to listen to the title screens than to play the game. —*Charles Ardai*



Zombies ■■■■

Bram/At

Question: What game for Atari has the action of an arcade game, the surprises of an adventure game and strategy all its own? Answer: *Zombies*. And not only does this game have all of the attributes mentioned before, but it has also set a task so diabolical, so close to impossible, that it just might turn you into a zombie of sorts yourself.



How difficult is this task? You decide. You must retrieve seven crowns that an evil cleric has stolen and placed in seven different dungeons. Each dungeon is entirely different and has a name all its own. Some of the names give you a clue to what you can expect in that dungeon (such as "The Realm of Impossibility" which allows you to walk on areas that look 3-dimensional but can't exist in the real world).

Of course, you can't just take a leisurely stroll into each dungeon, take each crown and walk out. The usual masters of malice come at you full force once you take your first step into any of the dungeons and you can't simply blast a few of them and go on to the next room. Why? Because you have no weapons to blast them with. You do have crosses that you can drop to block their way. If you're up against a lot of Orbs (the meanies in this game), circle around them while dropping crosses. There are also some scrolls in each dungeon. Each scroll will give you a spell. Spells can either freeze the meanies on screen, stop them from following you, or prevent them from hurting you when you are touched by one of them. Scrolls can be used upon request. You can also find 5 hit points some dungeons. Hit points are similar to "men" but expended quickly when you're touched by a meanie. Hence you start with 50.

The graphics can be described with few words: one of them is awesome. And you don't know the meaning of the word "enemy" until you've played this game. *Zombies* will definitely be around for years to come. —*Noel Steere*

HOTWARE

By George Kopp

Ken Uston's PuzzlePanic

Epyx/At, C64

Even if you can't place Ken Uston's name, you'll probably remember his story. A few years ago Uston left his job as a stockbroker to become a professional blackjack player. In most cases this might be a sign of severe mental problems but in Uston's case it was a sign of severe mental acuity. Uston was a practitioner of the science of card counting—a method of keeping track of what cards remain in a blackjack game—which, if properly mastered, can give the player as much as a two percent advantage over the casino. Uston parlayed this slim advantage into a fortune, but paid a price—he was banned from Las Vegas blackjack tables even though the courts ruled that card counting in no way constitutes cheating.

Even in his gambling days (although Uston doesn't consider his style of blackjack "gambling") the computer was a prime tool in developing his system. Millions of hands were dealt in a computerized game he played and the results formed the basis for Uston's first career change. His second career change brings him back to computers. There are Ken Uston blackjack games on ColecoVision from Coleco and an extremely sophisticated one for the Atari computers marketed by Screenplays. Now from Epyx, Uston gets away from cards and brings us *PuzzlePanic*, an enticing brain teaser combining manual and mental dexterity.

Clue me in

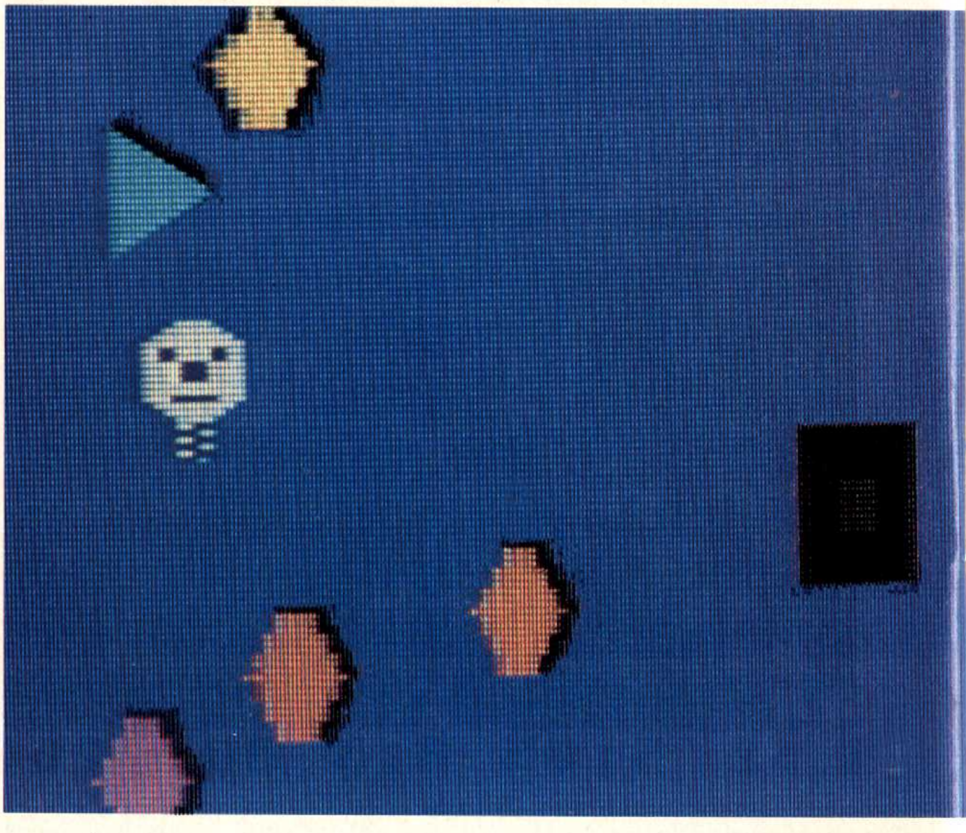
PuzzlePanic is a series of different games tied together by a string of clues and, well, puzzles. Penguin Software tried a similar trick with *Spy's Demise* and *The Spy Strikes Back*. Successful completion of a level would reward you with a line of a coded message. The only trouble was, the games were so hard that only the most expert joystick handler could hope to get even one part of the message. *PuzzlePanic* doesn't require incredible joystick skill—just enough to provide some healthy challenge. The mental part, though, will challenge the most ardent puzzlers.

Part of the puzzle is to figure out how the games work. The rules always turn out to be simple and logical—picking up all triangles, then all squares, then all pentagons, then all hexagons, for example. (Three, four, five, six, right?) Computer-generated randomizing is a feature of most of the games, so they don't play the same way twice. Sometimes the order you perform one task will determine the correct order for the next.

But the entire puzzle is like a maze. After the completion of a game you are given a choice of tunnels that will lead you to the next one. Any tunnel will get you to a new game, but only one tunnel will get you to the right new game. How do you know which game is right? The longer you go, the more is revealed to you about the signs and symbols that when properly interpreted, point you in the right direction. Thus you might complete 45 of the fifty games that constitute the entire puzzle only to find that the 45th clue reveals something that suddenly clears up a question you may have had in the fourth game. This will mean that you have to go back and start all over again in order to complete *PuzzlePanic* in the right sequence. Taking notes on all the data could be helpful.

One way

There's only one correct path through the maze of puzzles but things become more and more clear as you go along. Nothing is thrown in by chance. Everything has meaning. If you succeed in solving the game—getting from the beginning of the game right through to the end in the correct sequence—you may be eligible to win $1,000. This will not be easy money, let's clear that up right now.☐



YOUR MACHINE...

Continued from page 29

to a phone and a modem (modulator-demodulator, a device that sends and receives electronic signals through telephone wires), it can use communications software (also known as terminal programs or terminal emulators) to call up a distant computer. Once contact is established—by dialing a code number on your telephone—your computer can download (capture) information and programs from that computer, or, conversely, upload (send) to the other system the info and program stored in your machine's memory.

At the other end of the telephone line, networking software allows the sysop's computer to work much like a telephone switchboard. Depending on complexity, this software may accommodate automatic answering and response recording and forwarding of messages to the appropriate parties, and even "call forwarding" so that the bulletin board may be moved temporarily from a computer in one home to a computer in another (when, for example, the BBS owner is on vacation).

If you already own a computer with at least 48K RAM you're halfway home to becoming a bonafide sysop. However, New Jersey-based Ed Gelb, an executive with Panasonic and one of the busiest BBS operators with hundreds of daily callers, recommends a computer with at least 64K RAM for optimum working conditions. Gelb started his system as a specialized consulting service in 1981, but the board now includes a central message center and a section open to the general public for downloading games and other useful programs. He still uses his original equipment: a $1,500 Heath H-89 64K micro with two double-sided, double density disk drives, used to store the literally thousands of incoming messages left on the system. (A printer may be used as a storage option, Gelb says, but he finds it more convenient to rely on disk storage.) Each drive holds 700K bytes of memory on 5¼-inch floppy diskettes.

For the computer-to-phone hookup, Gelb uses a standard, direct-connect modem, Novation model 212A with a switchable baud rate of 300 or 1200 ($595 suggested retail). Baud rate controls the speed of transmission, with 300 baud moving data at a rate of 30 characters per second, and 1200 baud moving information at a rate of 120 cps. "Since most of your callers will be utilizing long distance lines, it's a good idea to give them the 1200 baud option," he explains.

Sysops also stress the importance of using direct-connect modems, which differ from the other main category, acoustically coupled modems, in two vital ways: the direct-connect modem plugs right into your phone's modular wall outlet for nearly perfect signal transmission, while the acoustically coupled modem connects to your telephone handset and may permit interference that can ruin a transmission. Secondly, the direct-connect-type device automatically answers the phone; using acoustic modems means you have to manually answer computer calls—a task that could escalate quickly into a full-time occupation!

To get ready for the 24-hour deluge of callers, Gelb advises investing in a separate phone line just for your computer. "My system is up and running all the time," he notes. "The monthly rate isn't that expensive and a dedicated line assures continuous, uninterrupted service, as well as never having to miss important calls."

Perhaps the easiest part of assembling your network is obtaining the software. Dozens of excellent sysop programs are available from—you guessed it—other BBSs. In fact, many of them are either free or nominally priced (from $5 to $50) for periodic upkeep because they are in the public domain, which means their authors have donated them out of the goodness of their hearts. To take advantage of this bonus, simply call around to the different BBSs and ask for downloadable communications and networking software. For example, Atari users can capture several starter BBS programs from a national net called AMIS (Atari Message and Information Service). The programs were developed by the Michigan Atari Computer Enthusiasts (MACE) and may be accessed by calling MACE (313) 544-0885 or ARCADE BBS (313) 978-8087. Other freebie network programs are available for Atari from the Itsy Bitsy Board, (408) 298-6930. For the IBM PC, there's RBBS-PC, a public domain BB sysop package available to CompuServe subscribers, and for the Radio Shack Color Computer try RAINBORD, priced at $20 on disk from the author, Lane Lester (413 Woodland Circle, Lynchburg, VA 24502).

Commercial packages can range in price from $75 to $200 and up. One of the least expensive (at $74.95) is A.B.B.S. (Apple Bulletin Board System), from Software Sorcery for the Apple II/II+/IIe. Another Apple program is Answering Machine for Apple II from Telephone Software Connection, Inc. For the Heath system, Ed Gelb has developed a BBS package which is available from Heath/Zenith Co. for $200.

One alternative to setting up an at-home system is to create a private network on The Source. For example, if you wanted to communicate with business associates or clients—perhaps sell them an information service or electronic newsletter—you could input your data on The Source's own network.

No matter which way you choose to pursue your sysop goal, the total hardware and software investment should run between $1,500 and $2,000 if you're starting from zero, and considerably less if you have some or all of the needed equipment.

Managing a BBS does carry a lot of responsibility and only those with a serious interest in running a system should apply. As one sysop notes, once you announce yourself to the world as a free access BBS, "people will go on calling you forever." Time is also a consideration. Many part-time sysops say they devote at least an hour a day (usually more) to responding to messages left on the system, maintaining the operation, tidying up files, repairing malfunctions, etc.

While there is no license requirement as is needed in amateur radio operation, BBS users follow a pretty strict honor system in which obscene and nuisance calling is strongly discouraged (although there are BBSs devoted to "non-family-oriented" discussion). Also shunned is non-authorized access to proprietary or information-sensitive networks, such as NASA or U.S. Department of Defense computers, hospitals, government offices, etc. Software piracy is a definite no-no, despite the existence of such BBSs as Mutiny Board, that not only proliferate the crime, but also transmit access phone numbers that lead to still other piracy boards. These BBSs are illegal and their sysops conceivably are subject to crackdown—even arrest and prosecution—by interested authorities. And while we're on the subject of piracy, it's a good idea to copyright all commercially viable information before you run it on a network.

Assuming you're ready to shoulder the task, how do you let people know about your BBS? Talk it up—leave message on your favorite boards, and on the Special Interest Group BBSs of CompuServe and The Source if you subscribe; tell user groups and computer clubs in your area, and write to clubs in other cities. Then sit back and prepare for your avalanche of callers. ☐

The Tale of Two Contests

Many of you are probably waiting breathlessly for the results of two EF contests. Here they are. In November we asked you to count the number of joysticks that appeared in the article *Joystick City*. The correct number was 43. Several of you had eagle eyes and so a random drawing was held to select the winner. The lucky recipient of a brand new joystick is Sean Moher. Good for you, Sean.

Five winners were chosen in *Your Game of Games* for correctly identifying the elements of our clever composite game screen. The winners of a Starpath Supercharger and complete library of Starpath games were: Russ Perry Jr., Brett Atwood, John Snyder, Jeff Bess and Mike Dinora. The correct 25 games were: *Zaxxon*, *Cosmic Creeps*, *Shark Shark*, *Pole Position*, *Riddle of the Sphinx*, *Killer Bees*, *Tunnel Runner*, *No Escape*, *Happy Trails*, *Smurf*, *Raft Rider*, *Spiderman*, *Crazy Climber*, *Beauty & the Beast*, *Volleyball*, *Plaque Attack*, *Space Cavern*, *Moonsweeper*, *Jungle Hunt*, *Sssnake*, *Rabbit Transit*, *Frogger*, *Kangaroo*, *Cat Trax* and *Bugs*. The game most missed by all contestants was *Bugs* by the now defunct Data Age. Second was Emerson's *Cat Trax*.

Q*Bert Qontest Winners

Here are the results of the January contest in which we asked you to send us your high scores on *Q*Bert* in any format. Well, we didn't know such high scores could be achieved. We had entries for five separate systems and so five cartridges will be sent to those five lucky people:

Louis Zucaro was the champion by far on ColecoVision with a knock-me-out score of 8,755,605 points.

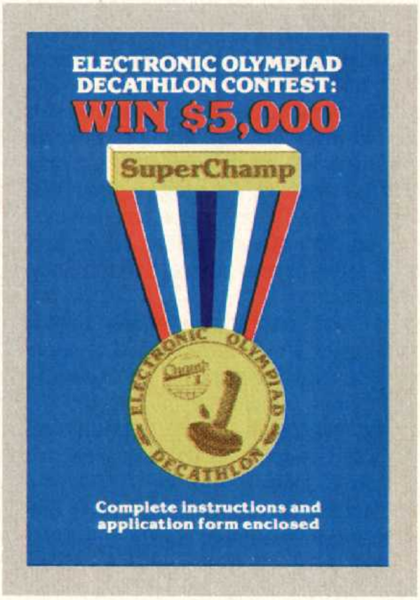
On the Atari 5200, the high scorer was picked in a random drawing as too many people were simply too good. The winner was Curtis McCladdy with 999,995 points.

Keith Mathieson had the winning score on the Intellivision system with 13,018 points.

Another random drawing had to be held to determine the Atari 2600 winner. With 99,975 points, Tony Baldwin gets the honors. And, finally, the winner on the 400/800 version, was P. John Mattos Dahil. Congratulations, everyone.

The Road to Megabucks

You can make lots of money playing Activision's *Decathlon* using a SuperChamp joystick from Championship Electronics. How much money can you win? Five thousand smackers ($5,000) that's how much. All you've got to do is get an official entry form from a specially marked SuperChamp joystick carton and send in your best 10-event total score with proper authentication. The top five scorers will be flown to Los Angeles for the finals. Second and third prizes will also be awarded. One thing: There's a glitch in the pole vault event which, should you find it, allows you to score millions of points. For this reason, you must send in your pole vault scores separate from the other nine events. For complete details, write to Championship Electronics, 711 Grandview Dr., South San Francisco, CA 94080.



FIRST SCREENING

Star Patrol
For the TI 99 4/A

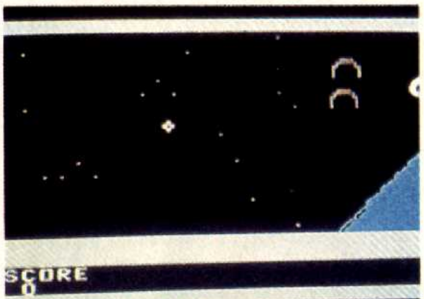
Star Patrol was written by two young computer programmers both of Scottsdale, Arizona and both students at Chaparral High School there. Henry Sanford and Nolan LeBlanc taught themselves how to program in BASIC and they've been programming for about one year. *Star Patrol* is written in extended BASIC and was done on Nolan's TI 99/4A computer. It requires at least 16K memory. Nolan, who is 15, would like to be an architect while Henry, 14, just got an Atari 800XL and would like to be a programmer.

The Game

There are space shoot-'em-ups and space shoot-'em-ups. Most of the time you don't know where you are or what you're doing (except blasting). In *Star Patrol* your mission is well-defined. Not since the great war between Fredonia and Sylvania in *Duck Soup* has the world witnessed such bone-chilling struggles as we have here—Zarconia versus the evil forces of Dalactonia.

Star Patrol asks you to perform above and beyond the call of duty; it asks you to enter the ranks of those heroes who revere life above all else, who put themselves last and put the welfare of those less powerful first. In short, it makes you a Great Protector of Worlds.

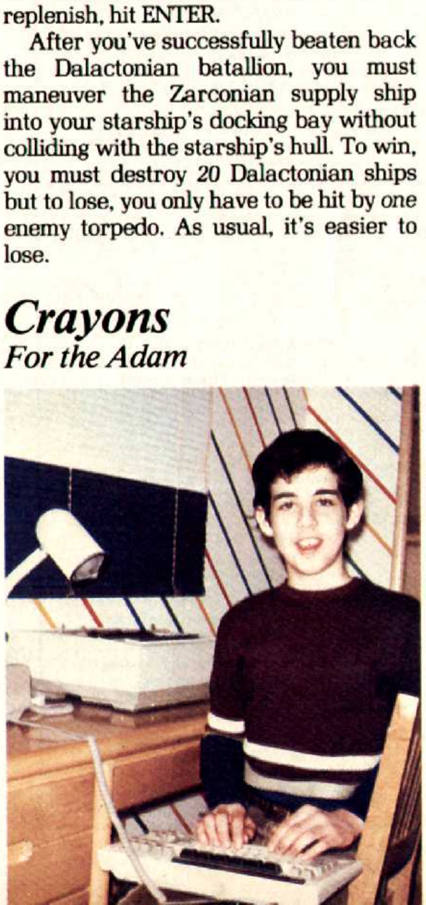
As starship commander, you have been assigned the huge responsiblity of protecting the peaceful planet of Zarconia from the destructive assaults of the tyrannical Dalactonian empire. At the time the game begins, you are orbiting Zarconia and are completely surrounded by the Dalactonian invasion fleet. What's worse, you cannot leave your orbit until you have vanquished the foe.



You use your joystick to move your gun site and take aim. A press of your fire button will release photon torpedoes at the enemy ships. You ammunition is not limitless. You can run out. To replenish, hit ENTER.

After you've successfully beaten back the Dalactonian batallion, you must maneuver the Zarconian supply ship into your starship's docking bay without colliding with the starship's hull. To win, you must destroy *20* Dalactonian ships but to lose, you only have to be hit by *one* enemy torpedo. As usual, it's easier to lose.

Crayons
For the Adam

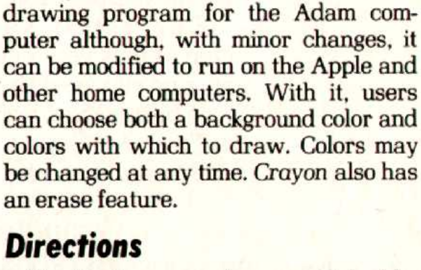


Crayons was written by Jason Hirsch, a 13-year-old seventh grader at Birney Middle School in Southfield, MI. He has been programming for about 2½ years. He learned to program in school on an Apple and then got an Adam which he likes very much.

Crayons is not really a game. It's a drawing program for the Adam computer although, with minor changes, it can be modified to run on the Apple and other home computers. With it, users can choose both a background color and colors with which to draw. Colors may be changed at any time. *Crayon* also has an erase feature.

Directions

Moving the cursor is accomplished by pressing number keys: 1 is down, 2 is up, 3 is right and 4 is left. To change the background color, press 5 and then enter the number which corresponds with the color you wish to use (see list below). To change the drawing color, press 6 and the corresponding number. One thing you should know is that when the background color is changed, the screen will be erased. As many drawing colors as you like may be displayed on the screen at the same time. To enter the erase mode, press 7. You won't notice any immediate difference in the screen but, if you go over any drawing color, it will be erased. The background color will not be erased however. Press 8 to end the program.



Each time you press a key, the cursor

Continued on page 79

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CRAYONS

```
1     a = 1
2     b = 1
3     ONERR GOTO 100
10    GR
20    PRINT "WHAT
      BACKGROUND COLOR
      WOULD YOU LIKE"; :
      INPUT bc
30    COLOR = bc
40    FOR scr = 0 TO 39
50    HLIN 0, 39 AT scr
60    NEXT scr
70    PRINT "WHAT
      DRAWING COLOR
      WOULD YOU LIKE"; :
      INPUT dc
80    COLOR = dc
90    PLOT a, b
95    PRINT CHR$(7)
100   GET c
110   IF c =  1 THEN b =
      b + 1
120   IF c =  2 THEN b = b-1
130   IF c =  3 THEN a =
      a + 1
140   IF c =  4 THEN a = a-1
150   IF c =  5 THEN 20
160   IF c =  6 THEN 70
170   IF c =  7 THEN GOSUB
      1000
175   IF c =  8 THEN END
180   IF a =  0 THEN a = 1
190   IF b =  0 THEN b = 1
200   IF b =  39 THEN b = 38
210   IF a =  39 THEN a = 38
250   IF c > 8 THEN 100
233   COLOR = 0: PLOT a, b:
      FOR w = 1 TO 200:
      NEXT
240   GOTO 80
1000  PRINT "ERASE MODE
      PRESS 5 TO RETURN"
1010  COLOR = bc
1020  PLOT a, b
1025  PRINT CHR$(7)
1030  GET e
1040  IF e = 1 THEN b = b + 1
1050  IF e =  2 THEN b = b-1
1060  IF e =  3 THEN a =
      a + 1
1070  IF e =  4 THEN a = a-1
1080  IF e =  5 THEN
      RETURN
1090  IF e > 5 THEN 1030
1100  IF a =  0 THEN a = 1
1120  IF b =  39 THEN b = 38
1130  IF b = 0 THEN b = 1
120   IF a = 39 THEN a = 38
1133  COLOR = 0: PLOT a, b:
      FOR w = 1 TO 200:
      NEXT
1140  GOTO 1000
```

STAR PATROL

```
1 CALL CLEAR :: INPUT "INSTRUCTIONS? (Y/N) :":X$
2 IF X$="y" OR X$="Y" THEN 3 :: IF X$="n" OR X$="N" THEN 37 ELSE 1
3 CALL CLEAR :: CALL SCREEN(2):: FOR X=2 TO 8 :: CALL COLOR(X,16,1):
: NEXT X :: PRINT
4 PRINT
5 PRINT
6 PRINT "         ***************"
7 PRINT "         * STAR PATROL *"
8 PRINT "         ***************"
9 PRINT :: PRINT "       BY NOLAN LEBLANC"
10 PRINT :: PRINT "             AND"
11 PRINT :: PRINT "          HENRY SANFORD"
12 PRINT :: PRINT "AS A STARSHIP COMMANDER YOU"
13 PRINT "HAVE BEEN APPOINTED TO THE"
14 PRINT "TASK OF PROTECTING THE "
15 PRINT "PEACEFUL PLANET OF ZARCONIA"
16 PRINT "FROM THE TYRANNY OF THE "
17 PRINT "DALACTONIAN EMPIRE."
18 PRINT
19 PRINT "YOU ARE PRESENTLY ORBITING "
20 PRINT "ZARCONIA AND ARE SURROUNDED"
21 PRINT "BY THE DALACTONIAN INVASION"
22 PRINT "FLEET. YOU CANNOT LEAVE"
23 PRINT "ORBIT UNTIL YOU HAVE BEATEN"
24 PRINT "OFF THE ATTACK." :: PRINT :: PRINT :: PRINT "PRESS ANY KEY
 TO GO ON"
25 CALL KEY(0,K,S):: IF S=-1 THEN 26 ELSE 25
26 CALL CLEAR
27 PRINT "TO FIRE TORPEDOES PRESS THE "
28 PRINT "FIRE BUTTON ON JOYSTICK #1."
29 PRINT "USE YOUR JOYSTICK TO MOVE " :: PRINT "YOUR TORPEDO SITE."
:: PRINT
30 PRINT "YOU CAN RUN OUT OF PHOTON"
31 PRINT "TORPEDOES AND TO GET MORE"
32 PRINT "PRESS ENTER. THEN MANEUVER"
33 PRINT "THE ZARCONIAN SUPPLY SHIP" :: PRINT "INTO YOUR STARSHIP'S"
34 PRINT "DOCKING BAY." :: PRINT :: PRINT "TO WIN YOU MUST DESTROY"
:: PRINT "TWENTY ENEMY SHIPS" :: PRINT :: PRINT
35 PRINT "PRESS ANY KEY TO BEGIN"
36 CALL KEY(0,K,S):: IF S=-1 THEN 37 ELSE 36
37 RANDOMIZE
38 CALL CLEAR :: INPUT "DIFFICULTY(1-2)":P :: IF P=1 THEN EE=.25 ELS
E EE=.5
39 Q=5 :: RANDOMIZE
40 CALL CHAR(120,"1800008181000018"):: CALL CHAR(100,"FFFFFFFFFFFFFF
FF"):: CALL CHAR(101,"000000003070F0F1E")
41 CALL CHAR(102,"1E1E1F0F07010000"):: CALL CHAR(103,"0000E0E0C08000
0000"):: CALL CHAR(104,"00000080C0C0E000")
42 CALL CLEAR :: CALL SCREEN(2)
43 READ W,B,C,D
44 CALL HCHAR(W,B,C,D)
45 IF W=16 AND B=29 THEN 65
46 GOTO 43
47 DATA 9,5,100,5
48 DATA 4,5,100,5
49 DATA 4,11,100,5
50 DATA 4,18,100,3
51 DATA 4,23,100,4
52 DATA 6,5,100,5
53 DATA 6,23,100,4
54 DATA 7,18,100,3
55 DATA 11,2,100,4
56 DATA 11,8,100,2
57 DATA 11,12,100,5
```

```
58 DATA 11,18,100,4
59 DATA 11,24,100,4
60 DATA 13,3,100,2
61 DATA 13,18,100,4
62 DATA 14,8,100,2
63 DATA 16,24,100,4
64 DATA 16,29,100,3
65 READ E,F,G,H
66 CALL VCHAR(E,F,G,H)
67 IF E=11 AND F=29 AND G=100 AND H=6 THEN 88
68 GOTO 65
69 DATA 6,9,100,4
70 DATA 11,2,100,6
71 DATA 4,5,100,3
72 DATA 11,5,100,3
73 DATA 12,7,100,5
74 DATA 12,10,100,5
75 DATA 4,13,100,6
76 DATA 11,14,100,6
77 DATA 5,17,100,5
78 DATA 11,18,100,6
79 DATA 5,21,100,5
80 DATA 11,21,100,4
81 DATA 15,22,100,2
82 DATA 4,23,100,6
83 DATA 11,24,100,6
84 DATA 4,26,100,4
85 DATA 8,27,100,2
86 DATA 11,27,100,6
87 DATA 11,29,100,6
88 R=0
89 CALL COLOR(9,INT(RND*14)+3,1)
90 R=R+1 :: IF R<30 THEN 89 ELSE 92
91 CALL COLOR(9,9,1)
92 CALL SOUND(500,110,0,220,0):: CALL SOUND(250,147,0,294,0):: CALL
SOUND(1000,196,0,392,0):: CALL SOUND(500,185,0,370,0)
93 CALL SOUND(250,147,0,294,0):: CALL SOUND(250,123,0,247,0):: CALL
SOUND(250,165,0,330,0):: CALL SOUND(1000,220,0,440,0)
94 CALL SOUND(10,40000,30)
95 CALL SOUND(500,220,0,440,0):: CALL SOUND(1000,277,0,554,0)
96 CALL CLEAR :: CALL COLOR(9,16,1)
97 CALL CHAR(59,"03070F3F7FFFFFFF"):: CALL CHAR(60,"0103060D1B372F6F
"):: CALL CHAR(58,"0103060D1B372F6F"):: CALL CHAR(61,"FFFFFFFFFFFFFFFF")
98 CALL CHAR(39,"0000001000000000")
99 CALL CHAR(92,"0000001000000000")
100 CALL SCREEN(2)
101 CALL HCHAR(1,1,100,32)
102 FOR X=17 TO 24
103 CALL HCHAR(X,1,100,32)
104 NEXT X
105 CALL HCHAR(9,32,60):: CALL HCHAR(10,31,59):: CALL HCHAR(11,30,59
):: CALL HCHAR(12,29,59):: CALL HCHAR(13,28,59):: CALL HCHAR(14,27,59)
106 CALL VCHAR(15,26,58):: CALL VCHAR(10,32,61,6):: CALL VCHAR(11,31
,61,5):: CALL VCHAR(12,30,61,4):: CALL VCHAR(13,29,61,3)
107 CALL VCHAR(14,28,61,2):: CALL VCHAR(15,27,61):: CALL COLOR(4,INT
(RND*13)+3,1)
108 CALL HCHAR(16,25,60):: CALL HCHAR(16,26,61,7)
109 FOR X=1 TO 20 :: CALL HCHAR(INT(RND*15)+2,INT(RND*24)+1,39):: NE
XT X
110 CALL COLOR(1,16,1,3,16,1):: FOR X=5 TO 8 :: CALL COLOR(X,16,1)::
 NEXT X
111 CALL HCHAR(5,30,101):: CALL HCHAR(6,30,102):: CALL HCHAR(5,31,10
3):: CALL HCHAR(6,31,104)
112 RANDOMIZE
113 CALL COLOR(10,INT(RND*13)+3,1)
114 CALL SPRITE(#2,92,7,INT(RND*(110-16+1))+16,INT(RND*(10-200+1))+2
00)
115 D=0 :: RANDOMIZE
```

```
116 CALL SPRITE(#4,92,7,INT(RND*(110-16+1))+16,INT(RND*(10-200+1))+2
00)
117 CALL SPRITE(#1,120,16,56,96)
118 DISPLAY AT(19,2):"SCORE" :: DISPLAY AT(22,2):"PHOTONS LEFT" :: O
=0 :: Z=0
119 Z=Z+1 :: CALL JOYST(1,X,Y):: CALL POSITION(#1,G,H):: IF G>16 AND
 G<119 THEN CALL MOTION(#1,-Y*2,X*2)ELSE CALL MOTION(#1,-Y/4,X/4)
120 IF SCO=20 THEN 217 :: IF O<5 THEN CALL MAGNIFY(1)
121 DISPLAY AT(19,2):"SCORE"
122 CALL KEY(0,K,S):: IF K=13 THEN 124 :: DISPLAY AT(20,2):SCO :: DI
SPLAY AT(23,2):Q :: IF O<10 THEN O=O+EE ELSE O=0 :: GOTO 126
123 GOTO 126
124 L=INT(RND*10)+5 :: IF L<10 THEN 125 ELSE 175
125 DISPLAY AT(19,2):"NO FEDERATION BASES" :: DISPLAY AT(20.2):"IN R
ANGE"
126 CALL POSITION(#2.S,T):: CALL POSITION(#4,U,V):: IF S=0 AND T=0 A
ND U=0 AND V=0 THEN GOSUB 172
127 IF Z=40 THEN 129 :: IF A=1 THEN 134 ELSE 135
128 DISPLAY AT(23,2):Q
129 Z=0 :: FOR X=1 TO 3 :: CALL SOUND(100.110,0):: NEXT X :: DISPLAY
 AT(19.2):"ASTEROID"
130 CALL CHAR(94."0000001000000000"):: CALL SPRITE(#12.94.16,INT(RND
*110)+16.INT(RND*256)+1.INT(RND*10)-5.INT(RND*10)-5)
131 FOR X=1 TO 100 :: NEXT X :: CALL CHAR(94."0000001818000000")
132 FOR X=1 TO 100 :: NEXT X :: CALL CHAR(94."3E7FDFBF57ABD66C")
133 CALL DELSPRITE(#12):: CALL POSITION(#2.T.U.#4.V.W):: IF T=0 AND
U=0 AND V=0 AND W=0 THEN 172
134 CALL CHAR(92."0000001818000000"):: CALL MAGNIFY(1)
135 IF O=2 THEN CALL CHAR(92."0000001824240000")
136 IF O=3 THEN CALL CHAR(92."0000183C66420000")
137 IF O=4 THEN CALL CHAR(92."003C7EC381818100")
138 IF O=5 THEN 139 ELSE 140
139 CALL CHAR(120,"0000081408000000"):: CALL MAGNIFY(2)
140 IF O>=6 THEN 141 ELSE 142
141 CALL POSITION(#2,G,H):: IF G>0 AND H>0 THEN 147
142 CALL DELSPRITE(#12):: CALL KEY(1,K,S):: IF K=18 THEN 145 ELSE 146
143 IF O>=6 THEN 144 ELSE 145
144 O=0
145 IF Q>0 THEN 158 ELSE DISPLAY AT(22,2)BEEP:"NO PHOTONS!" :: DISPL
AY AT(22,2): "             "
146 GOTO 119
147 CALL MAGNIFY(2):: CALL CHAR(93,"0000001000000000")
148 FOR X=1000 TO 950 STEP -5 :: CALL SOUND(-100,X,0):: NEXT X :: CA
LL POSITION( #2,T,U):: IF T>0 AND U>0 THEN CALL SPRITE(#5,93,16,T,U)
ELSE 119
149 FOR D=1 TO 100 :: NEXT D :: CALL CHAR(93."0000001818000000")
150 FOR D=1 TO 100 :: NEXT D :: CALL CHAR(93,"00003C3C3C3C0000")
151 FOR D=1 TO 100 :: NEXT D :: CALL CHAR(93,"007E7E7E7E7E7E00")
152 CALL SOUND(1000,-7,0):: CALL CHAR(95,"C0101826D1101008"):: CALL
CHAR(96,"0910102 1EE900808")
153 CALL HCHAR(8,1,95,32):: CALL VCHAR(2,16,96,15):: CALL VCHAR(4,21
,96,4):: CALL VCHAR(9,8,96,5):: CALL VCHAR(13,7,96,3)
154 CALL VCHAR(9,26,96,3)
155 CALL SCREEN(7):: CALL DELSPRITE(ALL):: CALL SAY("I WON")
156 SCO=0 :: CALL SAY("DO YOU WANT TO PLAY AGAIN")
157 CALL DELSPRITE(ALL):: CALL CLEAR :: D=0 :: INPUT "DO YOU WISH TO
 PLAY AGAIN?":D$ :: IF D$="y" THEN 96 :: IF D$="n" THEN END ELSE 157
158 Q=Q-1 :: CALL MOTION(#1,0,0)
159 CALL POSITION(#1,J,K):: CALL SPRITE(#6,39,9,120,1,(J-120)/4,(K-1
)/4):: CALL SPRITE(#7,39,9,120,256,(J-120)/4,(K-256)/4)
160 FOR X=220 TO 110 STEP -10 :: CALL SOUND(-100,X,0):: NEXT X
161 CALL COINC(#6,#1,30,C):: IF C=-1 THEN 163
```

```
162 GOTO 161
163 CALL DELSPRITE(#6,#7)
164 CALL CHAR(120,"7EFFFFFFFFFFFF7E")
165 FOR X=0 TO 30 STEP 2 :: CALL SOUND(-100,-5,X):: NEXT X
166 CALL COINC(#1,#2,8,C):: IF C=-1 THEN 167 ELSE 168
167 SCO=SCO+1 :: CALL DELSPRITE(#2):: CALL SOUND(-1000,-7,0)
168 CALL COINC(#1,#4,8,C):: IF C=-1 THEN 169 ELSE 170
169 SCO=SCO+1 :: CALL DELSPRITE(#4):: CALL SOUND(-1000,-7,0)
170 CALL COINC(#1,#12,10,C):: IF C=-1 THEN CALL DELSPRITE(#12)
171 CALL CHAR(120,"1800008181000018"):: GOTO 119
172 O=0 :: CALL CHAR(92,"0000001000000000"):: CALL SPRITE(#2,92,7,IN
T(RND*110)+16,INT(RND*256)+1)
173 O=0 :: CALL SPRITE(#4,92,7,INT(RND*110)+16,INT(RND*256)+1)
174 RETURN
175 CALL CHAR(110,"1800008181000018"):: CALL SOUND(100,110,0):: CALL
 DELSPRITE(A LL):: CALL CLEAR
176 CALL MAGNIFY(1):: DISPLAY AT(20,1):"DOCKING PROCEDURE COMMENCING"
177 FOR X=1 TO 500 :: NEXT X
178 CALL SCREEN(8):: CALL CLEAR :: CALL HCHAR(22,1,100,32):: CALL
HCHAR(23,1,100 ,32):: CALL HCHAR(24,1,100,32)
179 CALL CHAR(91,"0000C0E0FEFF0000"):: CALL CHAR(128,"7F557F557F7F7373")
180 CALL CHAR(129,"7F557F557F557F55"):: CALL CHAR(130,"000000001070
C18"):: CALL CHAR(131,"30206247C282878F")
181 CALL CHAR(142,"003C6EFF3C000000")
182 CALL CHAR(132,"00031E70C000000C"):: CALL CHAR(133,"1E331E0C3C6FC
C9E"):: CALL CHAR(134,"00C0780F0300F663")
183 CALL CHAR(135,"6361616060F3677F"):: CALL CHAR(136,"000000080E03
018"):: CALL CHAR(137,"1CE4C6E2C3513939")
184 CALL HCHAR(20,20,130):: CALL HCHAR(21,20,131):: CALL HCHAR(20,21
,132):: CALL HCHAR(21,21,133)
185 CALL HCHAR(20,22,134):: CALL HCHAR(21,22,135):: CALL HCHAR(20,23
,136):: CALL HCHAR(21,23,137)
186 CALL HCHAR(20,24;130):: CALL HCHAR(21,24,131):: CALL HCHAR(20,25
,132):: CALL HCHAR(21,25,133)
187 CALL HCHAR(20,26,134):: CALL HCHAR(21,26,135):: CALL HCHAR(20,27
,136):: CALL HCHAR(21,27,137)
188 CALL HCHAR(21,1,128,3)
189 CALL HCHAR(21,5,128,4)
190 CALL HCHAR(20,1,129,2)
191 CALL HCHAR(20,6,129)
192 CALL COLOR(9,3,1):: CALL COLOR(13,15,1):: CALL COLOR(14,15,1)::
CALL SPRITE( #10,91,15,168,96,0,5)
193 W=5
194 CALL SPRITE(#17,142,5,30,256,-1,-5)
195 CALL MOTION(#10,-6,10)
196 CALL CHAR(142,"003C76FF3C000000"):: DISPLAY AT(23,2):"SUPPLY SHI
P LEAVING" :: CALL SOUND(1,110,0)
197 CALL CHAR(142,"003C6EFF3C000000")
198 FOR X=1 TO 420 :: NEXT X
199 CALL DELSPRITE(ALL)
200 CALL CLEAR :: CALL SCREEN(2):: FOR X=1 TO 20 :: CALL HCHAR(INT(R
ND*15)+2,INT(RND*24)+1,39):: NEXT X
201 CALL CHAR(91,"03077FFF00000000"):: FOR X=1 TO 10 :: CALL HCHAR(X
,1,100,10)::NEXT X :: FOR X=11 TO 15 :: CALL HCHAR(X,1,100,5):: NEXT X
202 FOR X=16 TO 24 :: CALL HCHAR(X,1,100,10):: NEXT X
203 CALL MAGNIFY(2)
204 CALL SOUND(500,110,0,220,0):: CALL SOUND(250,147,0,294,0):: CALL
 SOUND(1000,196,0,392,0):: CALL SOUND(500,185,0,370,0)
205 CALL SOUND(250,147,0,294,0):: CALL SOUND(250,123,0,247,0):: CALL
 SOUND(250,165,0,330,0):: CALL SOUND(1000,220,0,440,0)
206 CALL SOUND(10,40000,30)
207 CALL SOUND(500,220,0,440,0):: CALL SOUND(1000,277,0,554,0)
208 C=-5 :: D=-5 :: CALL SPRITE(#18,100,1,120,40):: CALL SPRITE(#10,
91,15,100,256,-5,-5):: CALL COLOR(9,16,1)
209 CALL JOYST(1,X,Y)
210 CALL POSITION(#10,RR,SS):: IF RR<=80 AND SS<=80 THEN 216
211 CALL POSITION(#10,RR,SS):: IF RR>=128 AND SS<=80 THEN 216
```

```
212 CALL POSITION(#10,RR,SS):: IF RR>80 AND RR<128 AND SS<40 THEN 216
213 CALL MOTION(#10,-Y,X-2):: CALL COINC(#10,#18,10,C):: IF C=-1 THE
N 214 ELSE 209
214 Q=Q+5 :: CALL DELSPRITE(#10):: CALL CLEAR :: CALL CHAR(100,"FFFF
FFFFFFFFFFFF"):: CALL CHAR(120,"1800008181000018")
215 CALL MAGNIFY(1):: GOTO 96
216 CALL DELSPRITE(#10):: CALL SOUND(1000,-7,0):: GOTO 96
217 CALL SAY("GOOD WORK")
218 CALL CLEAR :: CALL DELSPRITE(ALL)
219 PRINT "YOU HAVE SUCCESSFULLY "
220 PRINT "DRIVEN OFF THE DALACTONIAN"
221 PRINT "ATTACK FORCE."
222 PRINT
223 PRINT "YOU HAVE BEEN PROMOTED TO"
224 PRINT "ADMIRAL!"
225 PRINT
226 CALL SCREEN(INT(RND*13)+3)
227 CALL KEY(0,K,S):: IF S=-1 THEN 228 ELSE 226
228 CALL CLEAR
229 PRINT "DO YOU WANT TO PLAY AGAIN?" :: CALL SAY("DO YOU WANT TO P
LAY AGAIN")
230 INPUT AAA$ :: IF AAA$="Y" OR AAA$="y" THEN 96 ELSE END
```

If you would like to see one of your original programs printed in ComputerFun here's what you must do: Send us a diskette or cassette copy of your game, a color snapshot of yourself, a one page description of the game including strategy tips and any other pertinent information and about a paragraph of biographical data. Whenever possible, we'd like to receive a printout of the game also. Please be sure to tell us which system it's for. Send all of this along with your name, address and phone number to First Screening, ComputerFun, 350 E. 81st Street, New York, NY 10028.

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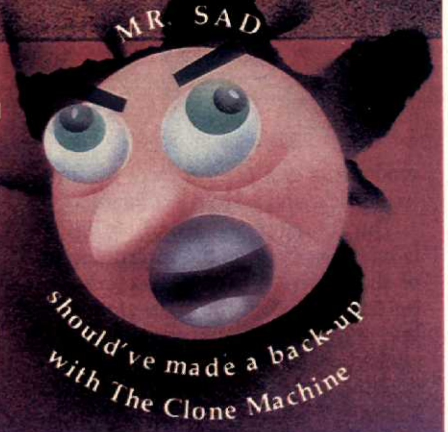

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HACKER'S HELPER

By Robert Alonso

Making your system crash

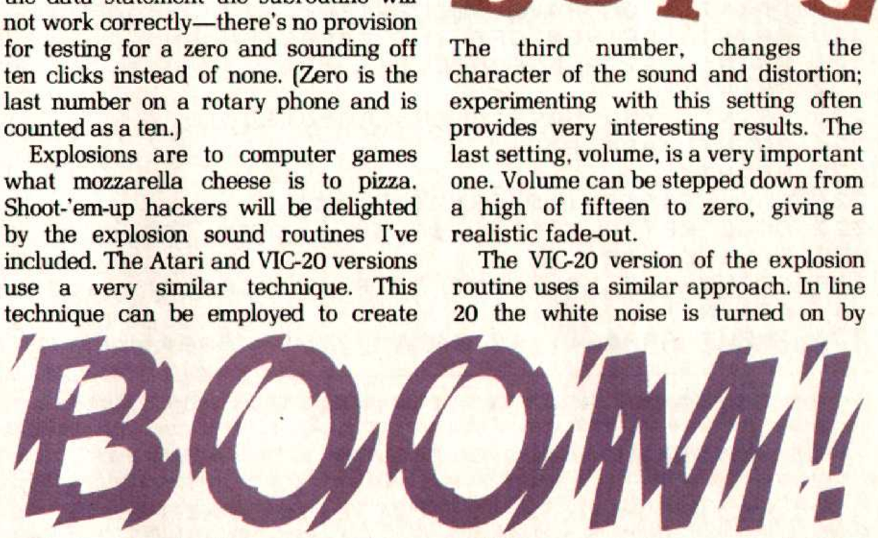
Even with professional programmers, sound is largely a matter of trial and error. Some software companies even have full-time sound specialists on staff, and these people may not even do the music that accompanies games. Experimenting with sound effects can be one of the ways you have the most fun with your computer. While the Atari, VIC-20 and C-64 all have excellent sound capabilities, the Apple, unfortunately, makes fewer noises than Harpo Marx. At least he had a horn. (Next month, though, we will include the Apple.)

The Call Of The Dial

Dialing Ma Bell's information number in New York City may not be what you purchased an Atari home computer for, but if you have ever considered having a rotary phone sound in one of your games you'll find this month's Atari program useful. For those of you who prefer TNT to ATT there's also an explosion sound routine thrown in for fun. Commodorians can choose from fanfares to explosions and missile fire sounds.

The rotary phone sound on the Atari is made by clicking the internal speaker of the Atari on and off according to a pattern stored in the data statement at line 99. The internal speaker can be clicked on by POKEing memory location 53279 with zero. Atari's SOUND statement is such a useful and versatile command that many programmers ignore or don't even know about the internal speaker. This subroutine is included to show you that there are some uses for the speaker. If you substitute a zero for any of the numbers in the data statement the subroutine will not work correctly—there's no provision for testing for a zero and sounding off ten clicks instead of none. (Zero is the last number on a rotary phone and is counted as a ten.)

Explosions are to computer games what mozzarella cheese is to pizza. Shoot-'em-up hackers will be delighted by the explosion sound routines I've included. The Atari and VIC-20 versions use a very similar technique. This technique can be employed to create explosion sound effects in any home computer that has a white noise generator and a way of stepping the volume down from a high setting to a low one. White noise is just a hissing sound that can be turned on or off by either placing a certain value in the Atari SOUND command or on the VIC-20 by POKEing memory location 36878 with any number.



The Atari SOUND command must be followed by four numbers, separated by commas. The numbers refer to the four components of the sound: voice, pitch, distortion and volume. I've chosen voice zero, which is best for explosions. On the Atari, the other three voices are musical tones.

The second number is the pitch setting. As you can see in line 50, I chose to start with the number ten, which gives me a very high-pitched sound. The general rule is that the lower the number, the higher the pitch produced.

The third number, changes the character of the sound and distortion; experimenting with this setting often provides very interesting results. The last setting, volume, is a very important one. Volume can be stepped down from a high of fifteen to zero, giving a realistic fade-out.

The VIC-20 version of the explosion routine uses a similar approach. In line 20 the white noise is turned on by POKEing a 242 into memory location 36877. The volume is then lowered by POKEing fifteen through zero into memory location 36878. In the VIC version I've also included an extra two lines—25 and 30—to make the explosion sound more realistic. The added effect is accomplished by lowering the number in memory location 36877 each time the volume is lowered. A delay loop is also inserted to prolong the sound effect.

All's Fanfare

In the VIC-20 program you'll also see a fanfare sound routine. This is created by POKEing a value from 175 to 215 into one of the tone registers. The one that I chose is at memory location 36876. The volume memory location is also used to create the sound effect in this routine. The volume is decreased from a maximum value of fifteen to a value of ten. This not only helps create the sound

Continued on page 75

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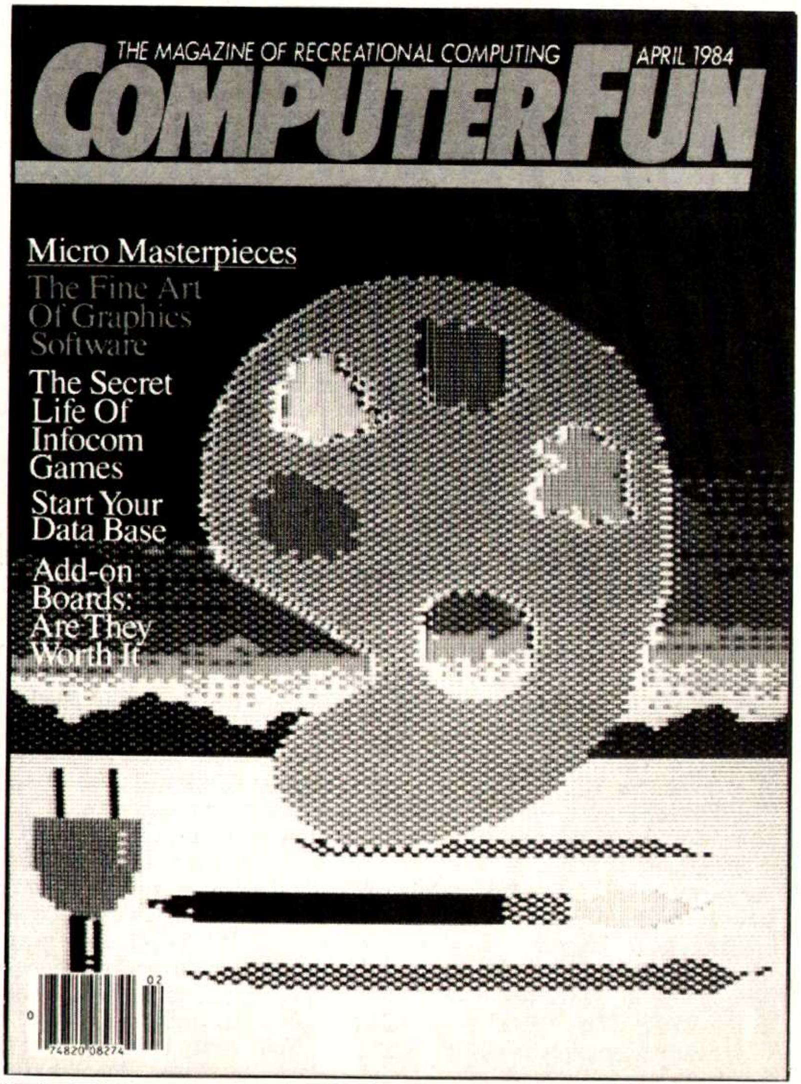

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GNUSTO OZMOO

Continued from page 34

useful when it comes to doors, windows, gardens and all sorts of elements.

There's something else important about the description of your surroundings. As mentioned before, the computer will only give you a detailed description the first time you enter a place. From thereon in, it will simply tell you where you are. For example, "Laundry Room." However, if there's something there that's important or if you've left an item or moved something, that will be repeated. So, if you're not sure about the value of a certain object, leave the room and then return. If something is present, it will be described again.

Not everything is pertinent, however. Infocom always throws in a lot or red herrings and it's your job to weed these out. There's no one way to figure out what's going to be necessary and what's not but you ought to be aware that red herrings are going to be planted. In fact, in *Deadline*, one of the characters actually sits down to a meal of red herrings while in *Witness*, the Oriental houseman is, at times, found opening a can of worms.

Look. Whenever you're stuck, ask for a description of the area you're in. Not only does this give you a chance to search for some clue you may have overlooked previously, but, if you've done something in that room, you may find that the description has altered in some way and that change may give you a whole new direction in which to go. For example, let's say you're carrying in your inventory a mechanical pencil, a matchbook, a saucer, a rope and a three-year-old-child. You go south and end up in a playground. It's your average elementary school playground with swings, monkey bars and a seesaw. On the seesaw is another three-year-old that "seems to be the same weight" as the child you're carting around with you. The words "seems to be the same weight" are in themselves a clue. Put your child on the other end of the seesaw and then Look. What may happen is that the seesaw will balance perfectly and a secret entrance leading to the Chemistry Lab will suddenly appear in the middle of the kickball diamond.

The general rule about objects is that, **if objects are going to be any use whatsoever, they will have one specific purpose.** Knowing this in advance enables you to look at other things you find with an eye toward how they can be used with what you already have found. For example, in your hapless meanderings, you've come upon a. perfectly good pair of pants. You already have a pair of pants on but you suspect that eventually you're going to find a good use for the second pair. You take them with you and, by golly, the next room you enter houses an old man who hasn't been able to leave his room for milennia because he hasn't got any pants. Give the pants to him. This will not only lighten your load but will probably make the man one of your most ardent admirers and no doubt he'll lead you to a room you otherwise couldn't have found by yourself.

Generally, once you've used something, you won't need it again. Discard it. You can't carry everything you find and you've got to leave yourself with some hands to carry other important things you'll find on the way. So, once you've used the scalpel to remove the inflamed appendix of the powerful but short dwarf, thus making him your friend, leave it somewhere. Chances are you won't find anyone else who needs emergency surgery.

Another comment on the usefulness of what you're carrying with you: If you find yourself in a situation for which there seems to be no solution, look at your inventory and try to figure out what, among the things you're carrying you (a) haven't used yet and (b) could possibly be used to extricate yourself or open up an enchanted door or talk to a recalcitrant toad or whatever. But don't reach for a solution. If you have to go through too much convoluted deduction, then you're probably barking up the wrong object. While the solution doesn't scream at you blatantly, too much over-reasoning is dangerous. The use of objects is rarely contrived. So, for example, you will almost never have to use the saw as a musical instrument on which to play lullabies which will put the vicious and rabid dogs guarding the entrance to the enchanted supermarket to sleep. The use of the saw will be more pedestrian than that.

You can't cut corners. In other words, if you've played *Deadline* before and have discovered something about the murder that happens at, say, two in the afternoon, you can't re-boot and use that information to arrest the suspect at 11 a.m. This is frowned upon by the School of Better Detectiving and besides, it's just not done. You can't know something in advance.

Similarly, you can't know something without having proof that you know something. So, if you confront Mrs. Robner about Steven, she'll play dumb unless you can prove that you know that she knows about Steven. She won't talk unless she knows that you know that she knows about Steven. You must have something to show her that is concrete evidence that Steven exists. Then she'll spill her guts.

In each game, certain things will tell you whether or not you're on the right track. Either the game will say in no uncertain terms that you're really going the wrong way, buddy, or it will be just a little more subtle. All the characters move at a frenzied pace if you do something right. If you're not doing something right, well, then nothing will happen. Everyone will simply sit around knitting or reading, the stars will twinkle, the sun will rise and set, Pinkerton will not return and you'll simply wear out your shoes and get hoarse trying to get them to confess. If things get dull, re-boot. Things should not get dull.□

DATABASELINE

Continued from page 44

players on different surfaces thus giving you the ability to second-guess what your opponent might do and give you a definite advantage by allowing you to anticipate his or her next shot. Using this information, aspiring competitors can scout opponents who will challenge their weaknesses and, in this way, they can develop their own skills accordingly. Psychologically, computennis can strengthen a player's faith in his or her game plan.

Computennis has programs that are designed for beginners and those at other skill levels. Beginners at camps who use the system can get printed "report cards" of their progress which consist of basic and intermediate stroke proficiency charts. These beginner programs provide basic groundstroke, serve and volley information as well as statistics and percentages of shots won and lost. The data provide black and white evidence of weaknesses and strengths which make it easier for beginners to recognize what has to be worked on in order to play more effectively.

The media is also benefiting from computennis. Using a computer to compile statistics effectively cuts in half the time it normally takes to tally up data by hand. Former tennis champion and current commentator Tony Trabert says, "Any information we can get to help us in the broadcast booth is greatly appreciated. As a player I would have loved to use it in order to know in advance my opponent's tendencies."

Even Billie Jean King thinks the system has great potential. "Anything that can improve someone's performance and help them realize their full potential is a great boon." She even thinks that the computer could be quite helpful in matching doubles partners so that a team would consist of one player whose strengths complemented the other's weaknesses and vice versa. This, naturally, would result in the strongest combination overall.□

HACKER'S HELPER

Continued from page 72

effect but also prolongs it, by working as a delay loop.

The SID (for Sound Interface Device) chip in the Commodore 64 is essentially a synthesizer, and it is perhaps the most advanced music and sound effect microchip in home computer today. Perhaps because it is versatile it is also very difficult to use. Many settings, including attack, decay, sustain and release have to be POKEd into the appropriate memory locations. As if these settings weren't enough to confuse you, the user-programmer also has to set the frequency, voice and volume. The programs I've included use these settings to create a swoosh sound that resembles a missile being fired. The same settings and a slight variation in the loop structure change the sound to a laser-like sound. The settings are taken care of in line 20 and line 40 and the loops are set up in lines 25 and 45. I made each routine independent of the other so that they can be easily inserted into your programs as subroutines. These subroutines are also dependent on an adjustable volume setting. On the 64, this is done by POKEing a value between zero and fifteen into memory location 54296. Explaining attack, decay, sustain and release is beyond the scope of this column, but we'll cover them in a future full-length article.

Next month, Hacker's Helper will include more computer fun than ever. In addition to the Commodore and Atari machines, the Apple, Adam and IBM PC-jr. will all be included.□

VIC-20

```
10REM BY ROBERT
ALONSO - VIC-20
15REM ***EXPLOSION
SOUND***
20POKE36877,242:FORY1
=15TO0STEP-1:POKE3687
8,Y1:NEXTY1
25POKE36877,242:FORY1
=15TO0STEP-1:POKE3687
7,PEEK(36877)-Y1
30POKE36878,Y1:FORZ1=
1TO100:NEXTZ1,Y1:POKE
36877,0
35REM ***FANFARE
SOUND***
40FORX=175TO215:POKE3
6876,X:FORX1=15TO10ST
EP-1
45POKE36878,X1:NEXTX1
,X:POKE36878,0:POKE36
876,0
```

C-64

```
10REM BY ROBERT
ALONSO -C-64
15REM ***MISSILLE
FIRED FROM BASE
SOUND***
20POKE54273,13:POKE54
272,143:POKE54277,48:
POKE54278,144
25POKE54276,129:FORX=
15TO0STEP-1:POKE54296
,X
30POKE54273,23+X:FORX
1=1TO30:NEXTX1,X
35REM ***UFO FIRING
BACK SOUND***
40POKE54273,13:POKE54
272,143:POKE54277,48:
POKE54278,144
45POKE54276,129:FORX=
0TO15:POKE54296,X:POK
E54273,23-X
:FORX1=1TO25:NEXTX1,X
50POKE54276,0
```

ATARI

```
10REM BY ROBERT
ALONSO - ATARI
20REM ***ROTARY PHONE
SOUND***
30FORX=1TO10:READA:FO
RY=0TOA-1
35POKE53279,0:FORX1=1
TO90:NEXTX1
40NEXTY:FORY1=1TO175:
NEXTY1:NEXTX
45REM ***EXPLOSION
SOUND***
50FORW=0TO15STEP1:SOU
ND0,10,8,W:NEXTW:SOUN
D0,85,8,15
55FORW=15TO0STEP-0.07
:SOUND0,45,8,W:NEXTW
99DATA2,1,2,5,5,5,1,2
,1,2
```

SLIPPED DISKS

Continued from page 10

firmness there will be good fortune and it will be advantageous to cross the great stream."

Obviously I should wait before taking this job. I liked the "brilliant success" part. The great stream had to be the Mississippi—if it was the Yangtze I was out of luck. The "great man" question remained unanswered.

The thought crossed my humble mind that maybe yarrow stalks aren't my true medium, so I decided to try the whole thing again with the coin-toss method. (When the coin-toss method was developed some thousand years ago or so, the original *Book of Changes* was amended to include the Book of Spare Changes—or so we hear.)

This time my hexagram came up with, "Ta Khu, the symbol of great taming force. If its subject does not seek to enjoy his revenues in his own family without taking service at court, there will be good fortune."

I was never good at deciphering double negatives. All I could figure was that I shouldn't have ducked jury duty.

It continued, "It will be advantageous to cross the great stream."

So far, so good.

"In the first line moving we see its subject as the dragon lying hidden in the deep. It is not the time for active doing."

A dragon lurking in the big stream? Maybe I should wait.

"In the sixth line moving we see its subject as the dragon exceeding the proper limits. There will be occasions for repentance."

Maybe I should have stayed with the yarrow stalks. The thought of a dragon exceeding the proper limits made my toes curl.

"Khwan represents what is great and originating, penetrating, advantageous, correct and having the firmness of a mare."

A mare?

"Yes, a mare! The advantageousness will be seen in getting friends in the Southwest and losing friends in the Northeast. If he rest in correctness and firmness there will be good fortune."

The *I Ching*'s message left no doubt: Go west, young truthseeker.

So I took the job. And I took the *I Ching* with me. It lounges by the pool while I toil away with the firmness of a mare. Every once in a while the great man comes in to see how we're doing. I spend my revenues on my family and my dragon has yet to exceed the proper limits. I'm still waiting for the brilliant success.

I don't know about you, but no matter what format it's done in, I find anything that even alleges to be able to predict the future fatally fascinating. This is probably due to the fact that my own ability to foretell events is laughable. Ask me what happened last week and I'm right on target every time but ask me about next month and I can't answer. What do I know about next month?

Followers of the *I Ching* may find this translation by James Legge unfamiliar and some of the features shorthand and unorthodox. (For instance, translating the lines to their numeric value is never shown.) Novices and the not-so-picky should enjoy having their sooth said by *Soothsayer*.□

Continued from page 25

Such versatility doesn't come cheap, however, and at about $300, the Gibson Light Pen is one of the most expensive graphics systems for the home.

Quick Draw

Whatever you finally decide upon, though, the only way to start getting the most out of your graphics program is to master some simple computer art techniques—and this is where Jon Gnagy comes in. Although graphics programs don't give you the cube, sphere, cone and cylinder, they do give you some basic shapes to work with, as well as some basic techniques to edit your drawings. The magnificent examples shown in this article were done by the (humble) author using the Koalapad and MicroIllustrator on the Apple II (unless otherwise noted, in which case they are the accomplished work of Datamost's talented art director, Art Huff.)

The biggest mistake most people make when first encountering the Koalapad is to immediately go into "draw" mode with the skinniest brush. This essentially turns your computer into a glorified pencil and paper, and chances are your work will be no better on computer than it would be in the margins of your class notes or office memo pad. Instead, why not hit "box" mode or "circle" mode? You get perfect results every time. Also, try to use a good thick brush whenever possible—be bold! An inhibited artist is doomed to a life of unremitting chartered accountancy.

My first effort on the Koalapad is the opus I call "Astro," since it was a direct rip-off of award-winning Fernando Herrera's graphics for the game *Astro Chase* (available from Parker Bros.) Starting with a black screen I went to the menu (accessed by moving the stylus to the very bottom of the Koalapad and hitting the button on the pad), moved the cursor to "disc" (hitting the button) and then moved the cursor to blue on the color palette. Then it was back to the screen to position the cursor where I wanted the center of the disc to be. Hitting the button establishes the center and moving the cursor outwards establishes the radius of the disc. If you want to change the position of a disc, remove the stylus from the pad, hit the button and start again. Leaving the cursor on the pad and hitting the button will cause the disc to be drawn.

With my blue disc on the screen I went back to the menu and changed colors—to green cheese for the moon. Back to the screen, position the new disc, and bingo! Instant solar system. Different colored discs make planets.

The continents I drew freehand (could you tell?) using one of the patterns provided on the palette. Cuba, you may notice, is quite prominent. This is because our technical editor, Robert Alonso, was kibbitzing at the time and his national pride was showing. Stars are incredibly easy. Using the "point" mode, a touch of the Koala button gives you a perfect dot, even if the dog jumps on your lap. Amenities like trees make the earth habitable for most forms of human life, and they can be added ad librium.

"Astro" took about ten minutes to complete and was greeted with such high praise at the office that I immediately set out to do something more ambitious. One of the nice things about graphics software is that you can free-associate after you've begun. You could set out to draw an abandoned refrigerator, for example, and end up with a covered bridge. What I set out to draw at my second attempt I can't remember, but I ended up with a beautiful pastoral scene which I called "Grenada."

To start with I drew the golden disc, using the same technique I used for "Astro." Then I drew the green island using one of the thick brushes on the menu. To get the blue sky I went into "fill." "Fill" is probably the most fun command, and it's available on all graphics programs. Just choose a color, position your cursor over a portion of your drawing, and everything enclosed within a solid outlined border will become the color you've chosen. Be careful, though. If a line is broken, even unto the width of one pixel, your "fill" color will leak uncontrollably all over the place. This is a real problem on the Apple with the Koalapad, although not on the Commodore 64. Koala has added an "oops" mode to the C-64 program which erases the command previously executed.

Design for living

Anyway, the next step was the house. After choosing a color I went into "box." This is just like "disc," except you draw a perfect box to whatever dimensions you want, using your stylus to control the cursor, which controls the box's size. (Both "box" and "disc" have companion commands, "frame" and "circle." These give you outlines rather than filled-in shapes. You can then make the interior a different color than the outline by using "fill." Using a thick brush in conjunction with "frame" or "circle" gives you a nice thick outline.)

"Box" gave me the front of the house. To do the sides I used "line." (Guess what "line" does.) Then I "fill"-ed the sides of the house and the roof. Even if you've done everything correctly, chances are good your picture will be a mess. The reason is that where different colors overlap or abut each other, the computer often has a habit of getting confused and throwing in a third color, usually an outrageous hot pink. To get rid of the pink requires some fine work, and most graphics software will allow you to "magnify."

The "magnify" mode zeroes in on an area of your drawing so that you can do a pixel-by-pixel touch-up job. If some of the pink is over an area that should be blue, here's what you do. Go into "draw," choose blue from your pallette, and choose your finest brush. Then carefully go over all the pink with blue while in "magnify." You'll be able to eliminate practically every unsightly blemish from your work.

In a fog

The tree and the bird were drawn freehand, but the cloud was a masterpiece of invention—just a series of overlapping discs of the same color. The washing on the line, the door and the windows are all boxes.

This was fifteen minutes work. But if you've got the patience and the talent, have a look at our cover. This was done by Steve Phillips, a professional artist and graphic designer (and design consultant for *ComputerFun*) who had never used a computer before, and he did it with the exact same Koalapad and MicroIllustrator program on the Apple that I did. He was so enamored of it that he bought one for himself and is now using it for other jobs.

If you want, you can also use a graphics tablet to trace work from magazine or books. Technical editor Robert Alonso (who at least can write a straight line of programming) did this with great success, although his final work is not suitable for publication in a family magazine.

Anything you do can be saved to disk forever, but anything you don't like can be destroyed just as permanently. So although you won't have any preliminary sketches that will be worth a fortune after you're dead, you won't have any embarrassing examples of your ineptitude lying around, either.

As mentioned before, many pieces of graphics software allow you to incorporate your work into your own programs, with varying degrees of difficulty. The indication we've gotten is that this option will also become more widespread as future graphics programs are developed. ☐

GAMEMAKERS

Continued from page 39

CF: Has this approach actually been clincially tested?

IW: Not specifically with *Relax* but in other ways. Having a fearful reaction is a learned response—and you can unlearn it. You can remove the negative effects without removing the positive effects that might go along with fearful associations. For example, you could still get hyped up for a speaking engagement without freezing up.

CF: Could you develop individual programs that would combat very common and specific fears such as fear of flying, fear of water and so on?

IW: Absolutely. Phobias are stimulus-response situations. They're learned modes and they're something that can be interrupted, but you have to interrupt them at the point where they're being stimulated. By noticing what your reactions are and by understanding that you have some sort of control over them, you can interrupt that automatic response and recondition yourself.

CF: When you put those little sensors against your forehead, how does it work? Is it like a standard joystick routine?

IW: It's basically an A/D converter. It takes an analog signal of a given amplitude—your muscles fire in the microvolt range—converts it into digital input in the computer and then translates that through the software. Think of it as a sine wave which you're modulating by putting information onto it. A sine wave is a pattern generator. Depending on the amplitude of the input, it will generate a particular kind of pattern.

CF: Could you use the headband as a conventional controller such as a joystick?

IW: Sure, but the headband is a one-dimensional controller. A joystick, on the other hand, is multi-dimensional. It offers users the opportunity to move up and down, right and left and to use the points between those two vectors in 45-degree increments. Then there's also the fire button dimension. Even a single dimensional controller such as a paddle control offers a fire button option. But with the headband, you have to take something—a game, say—that requires many dimensions of control and simplify it by translating it into something that can be used with a single dimensional controller. How? You take the simultaneous nature of it and put it out through time in a more linear sequence. For example, we're designing a game for this controller that is essentially a grid. At every one of the intersections is a little circle with a line that goes either horizontally or vertically. What you do is control the position of the cursor using the mind controller and when you come to a circle, hold it there and you'll be able to change your direction. So you've taken that simultaneous action and translated it into sequential form using time as the operative factor. We're designing a system now that we're going to be using with quadriplegics in order to let them use that type of control to pick things from a menu and do things they ordinarily might not be able to. I don't think this is something that would be used to replace a joystick but rather in conjunction with one.

CF: Since this is 1984 we must ask if there are evil implications of this device? Could it be used as a home polygraph for example?

IW: A polygraph measures many different things at the same time: GSR, EMG, brain waves, heart rate, etc. And the trick in using a polygraph is to have a really trained operator who can interpret what each movement of the trace means, and even then there's a margin of error. I don't think there's anything sinister lurking here. We might do a home lie detector sort of game—a murder mystery or something. Also, once we have the sensor headband out there, I think other people will begin writing software for it, too.

CF: Is this program a real departure from what you've done before?

IW: It is and it isn't. I've never used a computer in this way before, but a computer can be used in many ways. An interactive game with a lot of artificial intelligence and the ability to create a world for someone is one use. A skill and action arcade game with incredible graphics is another use and a *Relax* program is another use. I'm designing a musical instrument program right now that will be a departure from anything that's been around as well.

CF: Could this sensory device be used in application with an adventure game? For example, if you were reading the description, your reaction could determine in which direction the story would go.

IW: Or the game could ask you a question based on your reaction. Sure.

CF: I happen to know that you're in the process of developing the first adventure games for Synapse. What will make them different from adventure games already on the market?

IW: They're going to be even more interactive because we're developing a new language which takes these games one step further in interactivity than even Infocom games. The language is designed so that non-programmers can write games. Writers, for example. Writers are particularly good at

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creating environments and programmers are particularly good at coding and formalizing systems in order to interact with the machine. Our language allows a writer with no knowledge of computers to use the computer as an intelligent typewriter. I felt that in the Infocom games—and let me say here that I think Infocom games are probably the best examples of interactive fiction that are around so far—there were still a lot of problems with people getting stuck in particular situations. Infocom games have a puzzle orientation where there's a given set of circumstances that have to be solved in a particular way in order to get gratification. I didn't think that was the only role of adventure games. For example, I didn't like to find myself in a situation where I would type in something and I find that "couldn't do that... yet." Or where I found a flowery description which mentioned "sparkling water" and when I typed in "Examine sparkling water," the computer would respond with "I don't know the word sparkling water." I wanted more interaction. So I looked at it pragmatically. I don't like "guess what the vocabulary is" games. I think Infocom has gotten away from that recently but at the same time they still have a lot of dead ends where you're forced to be the prime mover in the game. I wanted to create an environment in which there could be characters moving around in that environment all with their own agenda of things that they want to do, a game that would be oriented so that if you're in a particular spot, people will come in and talk to you, ask you questions or you can ask them questions. Maybe they won't talk to you. Maybe they won't like the way you ask them the question. If you say, "Hey, tell me what's going on here and hurry up," that will have a different reaction than "I've seen you before. Can't you tell me where I am?" The characters not only move around and have things that they want to do within the game just as you have things to do within the game, they also have emotional valences. If you kick a guy, for instance, maybe he won't tell you anything for a long time. There's more than one way to solve them. Some will have solutions that you'll eventually get to but there are no dead ends. You won't find yourself in a situation where you can't go south, east, north or west. But you will find that if you go in the "wrong" direction, you might not discover something you need.

CF: Are you saying that there's no definite goal?

IW: No. There is a definite goal but there are a lot of different ways of achieving that goal. Rather than having this linear structure that branches in a particular way, it's more a series of interlaced circles that have tangents: tangents of time, activities, etc. At some point, the next circle that you need to enter to solve the adventure is tangent to the circle you're currently in. You have to find that point of tangency in order to make it through.

There are several ways to design a game. There's a case-driven game where there are maybe 150 cases that are explicit and these are the possibilities that exist. Or you can design a rule-driven game that doesn't have any cases specified but says if you do x, y and z it will create an infinity of cases. Laser video games are very case-driven games. The most rudimentary game of *Pong* is a rule-driven game in which you have an infinity of cases. If the ball is here and you're here, then something will happen. The ball isn't preprogrammed to be somewhere at a given time. So there you have the general concept of how I think adventure games should work.

CF: Will there be instances in your game where, if you do something wrong, you'll end up dead?

IW: In a sense, it can have that sort of conclusion. If you take a gun and shoot yourself in the head, then you have the case of "You made a mistake." Yeah, there will be that kind of thing. If you want to have an effective simulation of life, you have to have consequences attached to your actions. Sometimes the actions are rescindable, sometimes they're not. Going a little further, we're designing a game that reacts to your predilection for doing something. Take *Enigma*, one of this new series. You find yourself face down in the sand. You have to find out who you are, where you came from, what you do. There's a sense of discovery. □

ALL ON BOARDS

Continued from page 49

Expanding the musical capabilities of the different home computers has become a very popular goal for board makers these days. One computer that has always needed help in the music department is the Apple. Sweet Micro Systems (150 Chestnut Street, Providence, RI 02903) answered the challenge and created something truly incredible—the Mockingboard. The Mockingboard gives an Apple synthesized stereo sound through standard audio speakers (not included). The board, which retails for $124.95, plugs right into any of the eight expansion slots in the Apple computer and requires no special effort to install. The output of the board can either be directed into any two speakers or into the auxiliary input jacks of your stereo system. Although the Mockingboard is a truly worthwhile product, it would have been useless if the major software houses had ignored it altogether. They didn't. In fact, the Mockingboard is probably the board that most Apple software programmers include subroutines for.

Electronic Arts, for example, wrote their *Music Construction Set* to use the features of the Mockingboard. If only words could convey the sumptuous sound that the combination of these two produces, chances are you'd be tempted to purchase both as soon as possible. Everything from Mozart to pop songs like Little Anthony's "Tears on My Pillow" can be played with the duo, and of course, you can write your own.

If you are planning to use the Mockingboard for your own programming you'd better know the Apple inside out—more inside than out, even. Besides having to understand how the Apple works you'll have to know some machine language. Every example presented in the manual is in the Assembler representation of the machine language that will accomplish a task for you. From the looks of the manual it is definitely not a toy for the inexperienced. If however, you're like me and would rather just enjoy the quality sound that the Mockingboard can produce, then by all means consider getting one. Many Apple games are written for the Mockingboard, too, which means an end to "bleep bleep" Apple sound effects.

Another Apple-specific problem—joystick hook-ups—has been solved by Discwasher (1407 North Providence Road, Columbia, MO 65205). Discwasher's board is called the Calling Four and plugs into one of the Apple's expansion slots.

With Calling Four you can have up to four joysticks or three joysticks and one Koalapad (or any other creative combination you can think of) connected to your Apple at once. It allows you to easily choose which of the four controllers you would like to use for any given game, and you don't have to move your monitor and open your Apple each time that you want to switch. All you do is POKE a number between zero and three into a memory location before booting your disk. A convenient sticker is provided to put on your computer so you always have the POKE reference handy.

If you use your Commodore computer for word processing, but you're unhappy with your printer, Micro-Ware has an interface for you. The Connection, as it is called, will interface your VIC-20 or Commodore 64 with any of the more popular printers available for the home market today. What makes The Connection stand out from the rest is that is can be ordered with a specific ROM chip to correspond to the printer that you purchased. This gives you great flexibility and allows you to choose your printer without having to worry about whether it will work with your Commodore or not.

The version I used for this review was an Epson (with Graftrax) that even prints the special reverse control characters that the Commodores are quite fond of producing. The manual has to be the most comprehensive and well-structured that Micro-Ware has ever put together.

Another boon for C-64 owners is the C64-link which, because of its features, should more appropriately be called The Power. It is distributed by Richvale Telecommunications (10610 Bayview Avenue, Richmond Hill, Ontario L4C 3N8) at a retail price of $149. This little device that plugs into the cartridge slot of the Commodore 64 will upgrade your computer's BASIC and will let it communicate with more expensive and reliable Commodore printers and disk drives through a computer standard called an "IEEE." Other advanced features are a built-in monitor program and a built in interactive modem program. The Link will also enable you to link up to eight Commodore 64s together so that they can share the same IEEE drives and printers. The Link is so well documented that you will be able easily to make use of all its available features.☐

PASS/FAIL

Continued from page 12

less of whether anyone learns anything.

There is another serious flaw to *Stickybear*. All too often the objects float across the screen restlessly bouncing off wall and floor. No fixed pattern is held long enough to develop a sense of the size of the set from its image. But even when the set is stationary, as is the case when the arrows perform, the authors fail to exploit a very important notion. Had the set of six arrows (or six stars or hats or balls) been arranged in two sets of three, or a set of four and a set of two, the bright youngster might perceive why three plus three is six and why four plus two is also six. Admittedly the likelihood of this happening is not large, but why squander the opportunity?

Because *Stickybear* is essentially uninteresting, and demonstrably non-interactive, I give it a failing grade. It fails to involve the viewer except in a mostly passive way. It fails to exploit the remarkable capacity of the computer to captivate its audience the way video games do. A game of dominoes, or a deck of cards and an hour or so of *Blackjack* or *War*, would teach more about numbers and counting than a day's outing with *Stickybear*.

The advertisement claims, "The entertainment value of this program is as high as its potential for serving as a tool to familiarize children with the computer..." True. Both are about nil. I guess you can say I don't recommend *Stickybear*.☐

Dr. Jack Goldberg is Associate Professor of Mathematics at the University of Michigan in Ann Arbor. His specialties are applied mathematics and math education.

FIRST SCREENING

Continued from page 65

will flash and you'll hear a beep. You can silence it by deleting lines 95 and 1025.

One suggestion: avoid using black as a drawing or background color as the cursor will not flash in this instance. If you must use black, then change the color statement in lines 233 and 1133. The list of colors is on page 143 of the manual and listed below.

0 = black
1 = magenta
2 = dark blue
3 = dark red
4 = dark green
5 = grey
6 = medium green
7 = light blue
8 = light yellow
9 = medium red
10 = grey
11 = light red
12 = light green
13 = light yellow
14 = blue
15 = white

Program on page 66.

READOUT

Continued from page 51

distributed to 400 companies across the country. There is no guarantee that the responses have been double-checked for accuracy, and this could cost a software author thousands of dollars in royalties. It also shows a lack of thoroughness on the author's part. For this reason, the book should more appropriately be called, "Software Author's Directory," not "Guide."

Poor research is not the only failing of this book; it is also poorly thought out. One major source of income for software authors is completely ignored—print media. It is probably safe to say that the people who would be interested in a book such as this are amateurs, who probably cannot write blockbusters such as *Choplifter*. One way for amateurs to make money from their first attempts is to sell them either to magazines or book publishing houses. The computer book and magazine field is expanding at a greater rate than the software field because many people want to learn how to use and program their new computers. Many amateurs who might otherwise be counting disks in the sky are making some good money from magazines.

I wouldn't recommend *Software Author's Guide* to a beginner who wants to learn about the business. It is, however, a useful reference work simply as a directory of companies, but as such it is probably overpriced. —*Robert Alonso*

CARTRIDGE SLOT

Continued from page 14

salesperson is the next one, not the last one and it's in his interest to move both the dogs and the hits.

There are only three sales pitches for selling a video game that I know of. Number one is a real killer: "It's a good game." Try following that with a snappy rejoinder like, "Why?" Chances are this will lead smoothly into pitch two: "It's just (a) as good as, (b) better than or (c) other (a) *Pac-Man*, (b) *Donkey Kong*, (c) *Pitfall* or (d) *Communist Mutants From Space*." You could tell the salesperson, "But I hate all those games!" He'd probably ask you what game you like, and if you say *Demon Attack*, as sure as shoot-'em-up he'll say, "Well, this new game is just as good as *Demon Attack*."

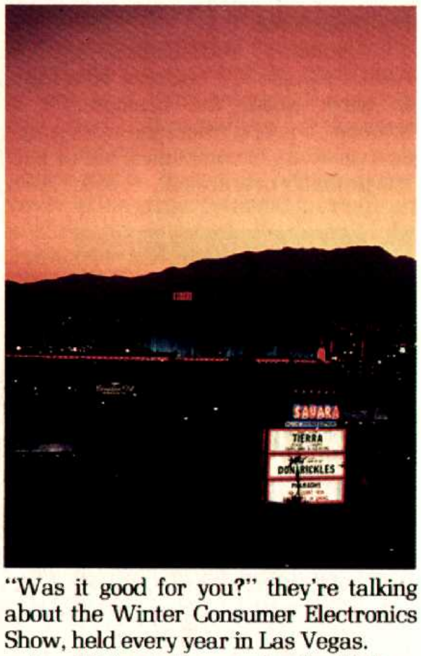
And what about pitch three? Simple: "You should buy this game because I'm blowing it out the door for $4.95." That might be the most persuasive pitch yet, and if you decide to buy I'm sure you won't be expecting the thrill of the arcade, high resolution graphics or two overlays. You'll probably be lucky to get a box. If you do, the salesperson will say something like, "This game features a box."☐

RANDOM ACCESS

By Qwerty

Manna in the desert

As a matter of business, electronics firms are always "getting into bed" with each other or performing various unprintable acts on one another. But in January when one exec asks another, "Was it good for you?" they're talking about the Winter Consumer Electronics Show, held every year in Las Vegas.



In addition to thousands of exhibitors of products as diverse as computers and CB antennas, CES is the temporary home for upward of 60,000 retailers, distributors, manufacturers, advertising people, publishers, editors, reps, and professional models who stand around in bathing suits. All this hooplah is dazzling, but as the computer observes in *Tron*, "If you've seen one Consumer Electronics Show, you've seen them all."

Real time

"It was a little more real this time," one software maker told me. Previous shows have seen product introductions galore of stuff that never quite made it to market. Remember the Atari 1400XL and 1450XLD? Those were introduced at the previous CES, the summer show in Chicago. At that one, Coleco, then riding high, stole Atari's thunder with *its* introduction of Adam. I remember sitting on the floor of a hotel corridor hearing a financial expert assure me that Coleco stock was headed for 85 points. Definitely. Guaranteed. That was also the summer that Coleco was trying hard to give away Cabbage Patch dolls to members of the press to generate a little publicity.

Now that the industry has "matured" there won't be any more nonsense. That's why the biggest event for the computer crowd at this show was the Commodore introduction of its 264 series. Scarcely had the circus left town when Commodore announced that the 264 had gone the way of the 1450XLD. So much for real.

Coleco caused quite a stir, announcing about a million software deals for the Adam, as well as a disk drive. As little as two weeks before the show, Coleco was telling reporters that the drive would be a three-inch microfloppy. It will instead be a 5¼-inch regular floppy, to everyone's relief. All software for the Adam will be made available both in disk form and on the "standard digital data packs." This provides a new definition for "standard" since the Adam is the only computer that uses that configuration or is likely to.

Software designers were having a rollicking good time trying to figure out Coleco's contract for third party programs. The preliminary draft forbade third party designers from ever saying anything bad about Coleco or its products, on pain of having his Coleco product not merely withdrawn from the market, but impounded. Still, a lot of designers signed up—including Sierra, Broderbund and Synapse—so it was hard to hear a discouraging word about Coleco. The president of one software company, though, when asked if there was anything he agreed with in the Coleco contract, said, "Yes, 'I, (Name Withheld).' "

Megabucks

Besides the gambling the execs do on the show floor, Vegas gives everyone the opportunity to play some other friendly games of chance. One exhibitor who won a little cash is Ken Uston, former professional blackjack player, author of many books, and now creator of *Ken Uston's PuzzlePanic* from Epyx. Uston is barred from every Vegas casino because he's too good, but he relived old times for a few brief hours. By the end of the evening Uston had been ejected from five casinos (always with a big hug, though) and was up over a grand. He also played the piano at the Desert Inn. Even though he plays piano as well as he plays cards, the hotel doesn't mind. ☐

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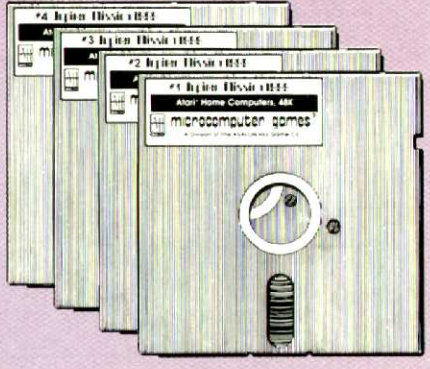
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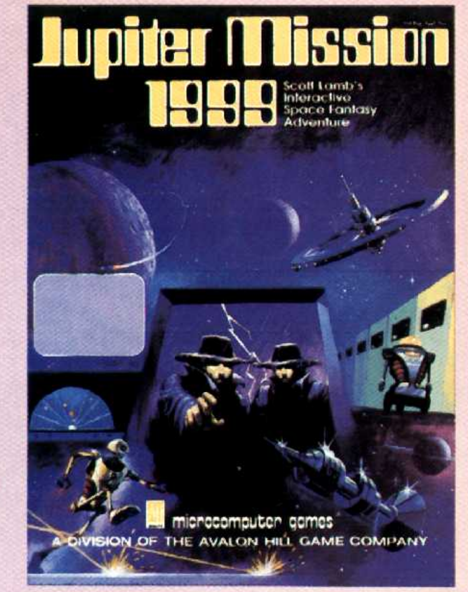
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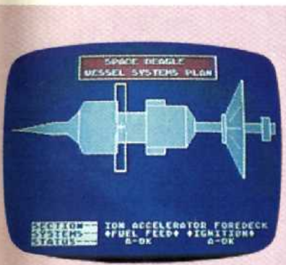
SPACE BEAGLE
VESSEL SYSTEMS PLAN
SECTION
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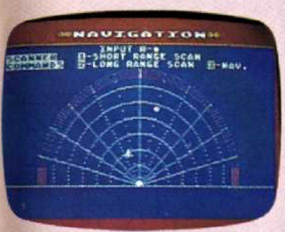
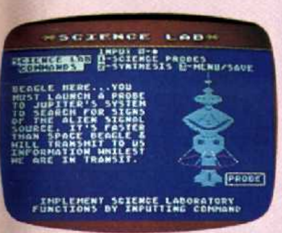
♦FUEL FEED♦ ♦IGNITION♦
A-OK A-OK

Ship Status Display:
Damage report


NAVIGATION
INPUT A-B
SCANNER
COMMANDS
A-SHORT RANGE SCAN
B-LONG RANGE SCAN
C-NAV.

Navigation Display:
Used to plot course


SCIENCE LAB
INPUT A-B
SCIENCE LAB
COMMANDS
A-SCIENCE PROBES
B-SYNTHESIS C-MENU/SAVE
PROBE

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BEAGLE HERE...YOU
MUST LAUNCH A PROBE
TO JUPITER'S SYSTEM
TO SEARCH FOR SIGNS
OF THE ALIEN SIGNAL
SOURCE. IT'S FASTER
THAN SPACE BEAGLE &
WILL TRANSMIT TO US
INFORMATION WHILEST
WE ARE IN TRANSIT.

IMPLEMENT SCIENCE LABORATORY
FUNCTIONS BY INPUTTING COMMAND
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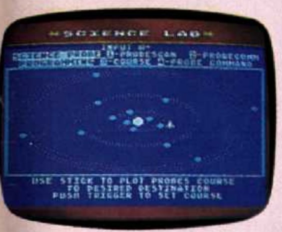
Science Lab Display:
Probe report


SCIENCE LAB
A-PROBESCAN
B-PROBECOMM
C-COURSE
D-PROBE COMMAND

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USE STICK TO PLOT PROBES COURSE
TO DESIRED DESTINATION
PUSH TRIGGER TO SET COURSE
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Science Lab Display:
Jupiter system diagramatic

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RRRING!!! RRRING!!! RRRING!!!

Too early on a chilly January morning, I was jarred awake by the noxious blaring of my traitorous doorbell. As I moved to accost the unknown aggressor, with the full force of semi-conscious wrath, I pulled on my robe and lost my dignity to the pain of a stubbed toe. Now fully awake, I opened the door, prepared to educate the mysterious interloper on the meaning of manners. My determination to this end was somewhat shattered when I saw two large men clad in long overcoats and wide-brimmed hats. Instinctively, I tried to slam the door. My retreat to safety was denied by the advance of the strangers. Before I could protest their entry, my vision was drawn to the shining silver badges that hung from their now unfolded wallets. They were government agents.

Hesitantly, trying to remember any crimes that I had ever committed, I invited them into my home. At their request, I produced my driver's license and other forms of identification. After examining these credentials, they asked me to pack a bag for an extended journey. After some protest and argument, I was made to understand that my options in this matter were less than limited. My country needs me, they said—with the clear implication that either I pack and dress or I take an extended journey in my robe.

This is how my adventure began. From my cold apartment, I was taken to a towering vehicle for an emergency mission to Jupiter. My very life on the line and, possibly, the survival of the planet Earth as well, and only God knows what other kind of perils await.

JUPITER MISSION 1999 is a highly detailed role-playing space adventure game that includes challenging arcade segments and mystifying puzzles. **Four separate program disks** are enclosed to test the creative imagination of the advanced computer gamer. **JUPITER MISSION 1999** is ready to run on your Atari® Home Computer with 48K memory and one disk drive. **$50.00**

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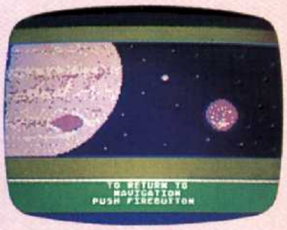
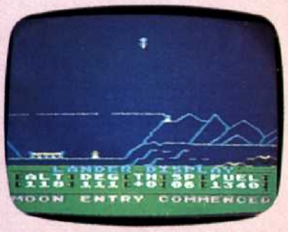


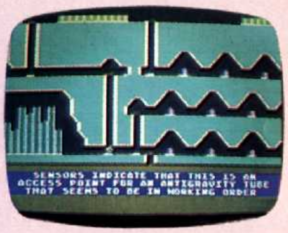
```
TO RETURN TO
NAVIGATION
PUSH FIREBUTTON
```

Porthole View
of Jupiter and a moon


LANDER DISPLAY

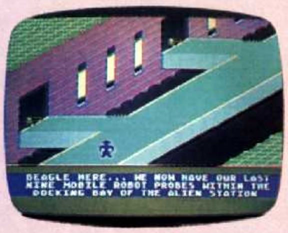
```
ALT DEG TM SP FUEL
110 111 40 06 1340
MOON ENTRY COMMENCED
```

Lander Approach Display:
note descending spaceship



```
SENSORS INDICATE THAT THIS IS AN
ACCESS POINT FOR AN ANTIGRAVITY TUBE
THAT SEEMS TO BE IN WORKING ORDER
```

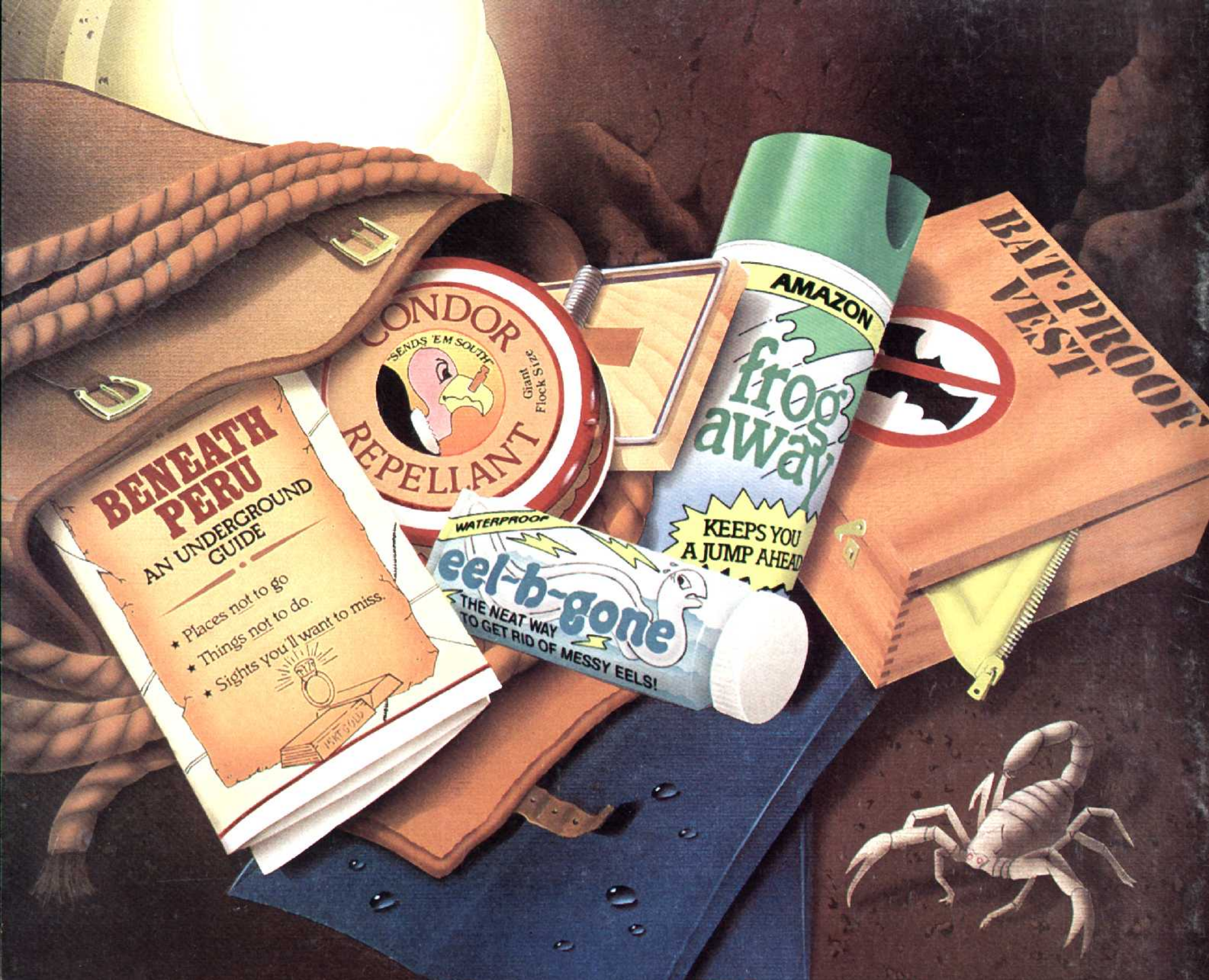
Exploring an
Alien Complex



```
BEAGLE HERE... WE NOW HAVE OUR LAST
NINE MOBILE ROBOT PROBES WITHIN THE
DOCKING BAY OF THE ALIEN STATION
```

Exploring an
Alien Space Station

Joystick required


BENEATH PERU
AN UNDERGROUND GUIDE
★ Places not to go
★ Things not to do.
★ Sights you'll want to miss.
CONDOR REPELLANT
SENDS 'EM SOUTH
Giant Flock Size
AMAZON
frog away
KEEPS YOU A JUMP AHEAD
WATERPROOF
eel-b-gone
THE NEAT WAY TO GET RID OF MESSY EELS!
BAT-PROOF VEST

LOOKS LIKE YOU'RE READY FOR PITFALL HARRY'S NEW ADVENTURE.

You're going to need a whole lot more than your toothbrush for this trip. You're headed deep beneath the jungles of Peru, deep into the Lost Caverns. Harry needs your help in finding his niece Rhonda and his sidekick Quickclaw. Not to mention a king's ransom in gold bars and the ever-popular Raj Diamond.

Pack your bag and gather your courage as you swim raging underground rivers full of electric eels. Dodge crash-diving condors. Avoid Amazon frogs, some very bitter bats and the dreaded cave rat …eeeek!

Harry has to run, hop, swim, jump off ledges and even use rising balloons to master this new mission. He needs your help in Pitfall II: Lost Caverns,™ currently for the Atari® 2600.™ Explore David Crane's newest, from Activision!

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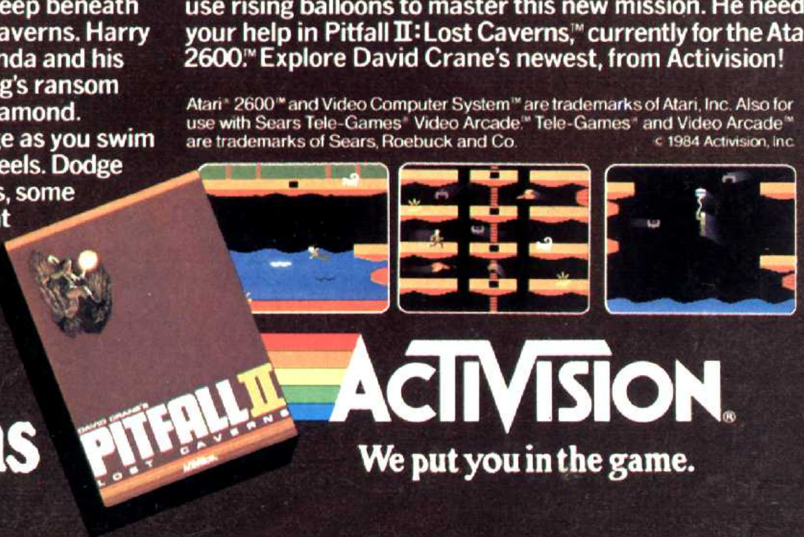
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LOST CAVERNS
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Lost Caverns

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